

The Adventures of Supermeat



Ki Tetze 5776

ו כִּי יָקֹרָא קֹנו-צְפֹר לְפָנֶיךָ בַּדָּרֶךְ
בְּכָל-עַץ או עַל-הָאָרֶץ, אַפְרָחִים או
בִּיצִים, וְהַאֲמָר רְבָצָת עַל-הַאַפְרָחִים,
או עַל-הַבִּיצִים--לֹא-תִקַּח הָאָם, עַל-
הַבְּנִים.

Deut. 22: 6 If a bird's nest chance to be before thee in the way, in any tree or on the ground, with young ones or eggs, and the mother sitting upon the young, or upon the eggs, thou shalt not take the mother with the young;

ד לֹא-תַרְאָה אֶת-חַמּוֹר אֲחֵיךָ או
שׂוֹרֵן, נַפְלִים בַּדָּרֶךְ, וְהַתַּעֲלִמְתָּ,
מִמֶּה : הַקְּם פְּקִים, עַמּוֹ. { ס

Deut. 22:4 Thou shalt not see thy brother's ass or his ox fallen down by the way, and hide thyself from them; thou shalt surely help him to lift them up again.

Key Questions:

- 1) Is Supermeat (meat grown from animal cells) actually meat?
- 2) Is it Kosher? Is it Pareve?
- 3) What is the impact on the “pain of animals” (Tza’ar Ba’alay Hayyim)?
- 4) What is the impact on the environment? The food chain? Economy?
- 5) What is the potential impact on the world hunger crisis?
- 6) What is the impact on human beings? Will it make us kinder by becoming less “carnivorous,” no longer having to kill for food - or will it make us more arrogant as we “play God?”
- 7) Is it totally coincidental that an Israeli company is developing it?
- 8) Is Supermeat the ultimate answer ...or the ultimate question?

Sources

1) To what lengths should we go to avoid animal suffering?

גמ' אמר רב יהודה אמר רב בהמה שנפלה לאמת המים מביא כרים וכסתות ומניה תחתיה ואם עלתה עלתה מיתיבי בהמה שנפלה לאמת המים עושה לה פרנסה במקומה בשבייל שלא תמות פרנסה אין כרים וכסתות לא קשיא הא דאפשר בفرنسا הא דאי אפשר בצרפת אין וαι לא מביא כרים וכסתות ומניה תחתיה והא קא מבטל סבר מבטל כל' מהיכנו דרבנן צער בעלי חיים דאוריתא ואתה דאוריתא ודחי דרבנן:

GEMARA. Rab Judah said in Rab's name: **If an animal falls into a pit, one brings pillows and bedding and places [them] under it, and if it ascends it ascends.** An objection is raised: If an animal falls into a pit, provisions are made for it where it lies so that it should not perish. Thus, only provisions, but not pillows and bedding? — There is no difficulty: here it means where provisions are possible; there, where provisions are impossible. If provisions are possible, well and good; but if not, one brings pillows and bedding and places them under it. But he robs a utensil of its readiness [for use]? — **[The avoidance of] suffering of dumb animals is a Biblical [law], so the Biblical law comes and supersedes the [interdict] of the Rabbis.** *Babylonian Talmud, Shabbat 128b*

2) Going Beyond Simply Stopping Animal Cruelty *Rabbi Jonathan Sacks; Judaism regards animals as sentient* beings. They may not think or speak, but **they do feel**. They are capable of distress. There is such a thing as cruelty to animals, and as far as possible it should be avoided. Thus, for example, in Ki Tetse we read: Do not muzzle an ox when it is treading grain. What is striking about this law is that **it parallels** provisions **for human beings** as well: When you come [to work] in your neighbour's vineyard, you may eat as many grapes as you desire to satisfy your hunger. However, you may not put any into a receptacle that you may have. When you come [to work] in your neighbour's standing grain, you may take the ears with your hand. However, you may not lift the sickle [for your own benefit] in your neighbour's grain. The principle is the same in both cases: it is cruel to prevent those working with food from eating some of it. To be sure, in the case of humans there is a delicate balance of reciprocal responsibility. The employer must allow his employee to eat, but the employee must not engage in petty theft. But the **parallel is instructive**. Animals, too, have feelings and they must be **respected**.

3) Beyond simply prohibiting cruelty to animals, Jewish tradition associates care for animals with righteousness. Within the Torah, the commandment to send a mother bird away before taking eggs or chicks from her nest is one of the few commandments that promises long life to those who fulfill it. The book of Proverbs comments that, "A righteous person knows the needs of his beast, but the compassion of the wicked is cruelty (Proverbs 12:10)." The medieval Rabbi Yehuda ha-Hasid even defines a cruel person as "one who gives one's animal a great amount of straw to eat and the next day requires that it climb up high mountains. Should the animal, however, be unable to run up quickly enough in accordance with its master's desires, its master beats it mercilessly (*Sefer Ha-Hasidim* paragraph 669)." Traditional Jewish texts about animals neither forbid the use of animals for food or work, nor give humans license to do with animals as they wish. Rather, these texts demand that we engage in a more complicated negotiation between the simultaneous impulses to provide for human need and to prevent unnecessary cruelty to creations of the divine.

According to Moses Maimonides, "Since the desire of procuring good food necessitates the slaying of animals, **the Torah commands that the death of the animal should be the easiest**. It is not allowed to torment the animal by cutting the throat in a clumsy manner, by piercing it, or by cutting off a limb while the animal is still alive (*Guide of the Perplexed* III:48)." Jews are permitted to eat meat, but are commanded to take precautions to ensure that our carnivorous desires do not cause unnecessary suffering to animals. Thus, the Torah prohibits both cooking a kid in its mother's milk and taking eggs or chicks from a nest while the mother bird is present (Deuteronomy 22:6). These two laws indicate a concern for the emotional pain of the mother bird or cow, who should neither see nor participate in the killing of her children. On the basis of the prohibition against tzaar baalei hayim, some contemporary Jewish legal scholars have forbidden the methods of overfeeding animals used to produce delicacies such as veal and *foie gras*. On the subject of veal, Rabbi Moshe Feinstein, one of the most important Orthodox legal thinkers of the twentieth century, comments: "[in regard to the situation in which] every calf is in its own pen, which is so narrow that it does not have space even to take a few steps, and the calves are not fed the appropriate food for them, and have never tasted their mother's milk, but they are fattened with very fatty liquids...this is certainly forbidden on the basis of tzaar baalei hayim. Even though it is permissible [to cause pain to animals] in order to satisfy human needs, by slaughtering animals for food, or by employing animals to plow, to carry burdens or other such things, it is not permissible otherwise to cause them suffering, even when one stands to profit from such practices (*Igg'rot Moshe, Even haEzer* 4:92)." - **Rabbi Jill Jacobs** <http://www.myjewishlearning.com/article/ethical-treatment-of-animals-in-judaism/>

4) WHAT IS SUPERMEAT? Imagine yourself walking into a restaurant, sitting down by a table, and perusing throughout the menu. You notice several different varieties of meat-based products, from steak, to grilled chicken, to baby back pork ribs. You then look around the restaurant and notice all of the customers enjoying their meals. You might not know it, but these customers have radically different dietary choices. Some are vegetarians, others are omnivores. And yet everyone is enjoying the very same meals. What's the deal? How can vegetarians be enjoying a plate of baby back pork ribs or an 8oz medium rare steak? The reason for this real-world episode of the Twilight Zone is due to lab-grown meat production. With the advancements in stem-cell research and meat culturing, now everyone can enjoy the delicious habit of eating meat without contributing in the mass slaughter of living animals. That is the future of which companies like SuperMeat is helping turn into a reality. And it's a future that is closer than you think. According to the Food and Agriculture Organization of the United Nations (FAO), **animal agriculture contributes 9% of human-induced CO2 emissions into the atmosphere. Subsequently, livestock contributes 37% in methane emissions, and 65% of human nitrous oxide emissions**. When you couple global society's obsession with meat into the total –especially beef – you get a clear understanding of how our eating habits contribute in climate change. How can we stop this? With lab-grown meat, of course! And SuperMeat is prepared to help lead the charge. "Meat is delicious. Everybody knows that. We were looking for the best way to end animal suffering, but also be realistic about global meat eating habits. We've been working with Prof. Yaakov Nahmias, a major player in the first decellularization of an intact liver for transplantation. Together we've been developing a system for producing small scale cultured meat. That means growing REAL meat in machines in supermarkets and communities all over the world."

4) JEWS FOR CHEESES: Rabbi Isaac Klein, in a responsum adopted unanimously by the CJLS on January 20, 1972, affirmed, "It is our considered opinion that cheeses, all cheeses, including those in which rennet, any rennet, is used as the curdling agent should be permitted." And he explains: The rennet used today cannot be considered forbidden because, first of all, most of it is derived from dried up skins that have become like a piece of wood. In addition, the extraction is brought about by

the use of strong chemicals and acids which removes the substance from the status of a food fit even for a dog. And third, the rennet goes through a number of chemical changes that transform it into a new substance."

5) Halachic Insights into Genetically Engineered Meat – Rabbi Yehuda Spitz, Ohr Samayach

a) Truthfully, meat created from non-traditional sources **has a tradition and precedent**, and is already mentioned in the Gemara, once regarding meat that came down from the heavens, and again concerning meat that was created using the Sefer Yetzira, "the Book of Creation" attributed to Avraham Avinu. The Malbim writes that meat created using the "Sefer Yetzira" is essentially pareve. **That is why Avraham Avinu was able to give the visiting Angels a meal containing both milk and meat**; the meat was truly pareve, as Avraham created it that day! The Cheshek Shlomo, Av Beis Din of Vilna in the nineteenth century, extrapolates further. He averred that ergo, milk from a cow that was created via the "Sefer Yetzira" is not truly 'milchig', rather pareve too. If so, some opine that our test-tube burger should be considered not only kosher, but pareve as well, due to this *halachic* precedent. However, even according to this theory, in order for the burger to receive this *halachic* status, the cow that the stem cells were harvested from would need to have had a proper *shechita*, precluding a biopsy from a live cow. As although meat created utilizing the "Sefer Yetzira" should not technically need ritual slaughter, as it was not truly alive, nevertheless, *shechita* still would be mandated, due to the Rabbinic injunction of *Maris Ayin*. The most basic definition of this law is the prohibition of taking actions which, strictly speaking, are permitted according to *halacha*, but nevertheless give onlookers the impression that we are doing something *halachically* forbidden. Accordingly, the same would apply to our home-grown hamburger, and ***shechita would be required***.

b) Another possible precedent posited was to compare the lab burger's status to that of **gelatin**, which is a whole separate discussion in itself. Already controversial when cited in *halachic* literature over a century ago, gelatin's kashrus status is still being debated. Gelatin is a translucent, colorless, and flavorless solid substance, derived from collagen obtained from various animal by-products, mainly the bones and skin of cows and/or pigs. It is the gelling agent that makes marshmallows and 'gummy bears' gummy. The process to make gelatin is an interesting one: the collagen in the bones and skin of the animals is converted into ossein by soaking them in hydrochloric acid. Then it is soaked in lime for about a month, followed by a wash in sulfuric acid. (Do not try this at home!) Contemporary authorities debate gelatin's *halachic* status. Although Rav Chaim Ozer Grodzinsky *zt"l* permitted **gelatin** made utilizing hard cow bones, and Rav Ovadiah Yosef *shlit"a*, even allowed gelatin made from cow skins, nevertheless, when this *sheilah* arose in the 1950's - 60's most Gedolim based in America, including Rav Aharon Kotler *zt"l*, Rav Eliezer Silver *zt"l*, Rav Moshe Feinstein *zt"l*, and Rav Yosef Eliyahu Henkin *zt"l*, [as did most later poskim in Eretz Yisrael], all unequivocally prohibited gelatin, unless it was derived from properly *shechted* kosher animals. Nowadays, although the Israeli Chief Rabbinate permits gelatin as kosher and has a distinct designation, "*kosher l'ochlei gelatin*"; on the other hand, no Mehadrin kashrus agency or Badatz in Eretz Yisrael, nor no mainstream certifying agency in America considers real gelatin kosher, unless it is produced from properly *shechted* kosher animals.

Back to our test-tube burger, if it can be compared with gelatin, as it is essentially a meat based product that has **undergone extreme change via chemicals**, its *halachic* status would depend on the above *machlokes*. According to those who rule leniently with gelatin that is not kosher based, the same dispensation should be given to our Petri dish piece of meat and the actual source of the original stem cells should not trouble us too much. Yet, according to the mainstream opinion that kosher gelatin must originate from a *shechted* kosher animal, the same should apply to our lab created burger and be mandated for it as well.

SuperMeat, SuperMeat, It's Super-Freaky!

Israeli start-ups get in on the fake meat industry. But are their food creations kosher?

By Marjorie Ingall, Tablet Magazine

It's not Soylent Green, and it tastes like chicken! Israel21c, a glossy online magazine started by Israeli-American technology execs to publish upbeat stories about Israel, recently shared news of two thrilling comestible start-ups.

SuperMeat (which I prefer to call SuperMeat! as in *SuperMeat! The Musical!*) is a cultured meat product (aka "in-vitro meat") grown in a lab from chicken stem cells. The company's research team is headed by Professor Yaakov Nahmias, an expert in tissue engineering and nanotechnology at Hebrew University and winner of an NIH career award. The company's co-CEO, Koby Barak, is a vegan.

Israel, as you probably know, has a strong and growing vegan movement. Nahmias and Barak's goal is to create a sustainable, cruelty-free chicken product, taken from a painless chicken biopsy, which we will be able to grow in a special nutrient rich soup (or slurry, a word I prefer because it is more science-y and shudder-inducing) in a special meat-producing machine in our home or restaurant. The company's Indiegogo campaign met its funding goal in eight days, which is only three days longer than God took to create actual chicken. The Indiegogo page is delightful and polished, featuring a very funny actress starring in a video that impresses upon us all the need for bio-lab-chicken. On SuperMeat's Facebook page, the company's young staff sing an off-key song, "SuperMeat! Real meat without harming animals!" (I wrote my own song in my head, to the tune of PBS's children's show Super Why: "Who's got the power, the power of meat/Who's into labs for the answer we need? SuperMeat! SuperMeat!")

Meanwhile, another Israeli startup, Flying SpArk, based in Ramat Gan, is working on an alternative protein made out of fruit fly larvae. (Stop throwing up and come back here!) With technology from The Technion-Israel Institute of Technology, Flying SpArk is part of The Kitchen, an incubator founded last year by the huge Israeli food producer The Strauss Group and the Israeli Ministry of Economy. The Kitchen invests in tech startups that "disrupt the global food system—making it more productive, more affordable, more sustainable and healthier." (Technology companies, I beg you, please stop saying "disrupt" and "change agent.") Every company in the incubator gets half a million dollars of seed money.

It's clear that there's a huge need for reform and innovation in the way we grow, consume, and ship food. Having an easily harvested and grown protein source could help ameliorate climate change and world hunger. It could be affordable and scalable as well as humane. It could eliminate *shandas* like the Agriprocessors slaughterhouse. And in-vitro meat has been in the works for a while: In 2013, Professor Mark Post in the Netherlands introduced the first lab-grown hamburger, which fooled some food critics into thinking it was straight from the grassiest of fields. Back then, the burger cost \$350,000 to produce. Today,

scientists can whip one up for 80 percent less, and they're closing in on a \$10 burger. So the future is coming quickly. But I know you're asking: Will it be kosher?

SuperMeat! is confident that the answer is yes. A video on the company's Facebook page quotes three Israeli rabbis saying that the product would not only be kosher, but also pareve. Their reasoning is based on the concept of "a new face," *panim chadashot*. (Or "*ponim chadoshos*" if you want to say it in Brooklyn *Ashkenozis*.) The argument is that when a product goes through massive chemical transformations in its manufacturing process, it becomes a whole new thing. *Ponim chadoshos* was the rationale for the OK-ness of gelatin from cows that weren't slaughtered in a kosher way; it was the logic behind the kosher-legit-ness of a genetically engineered tomato created with genetic material from a pig. (Fun fact: One of the first emails I ever wrote to someone I did not know, back in the early '90s, was to Ask the Rabbi, a web site that answered halakhic questions. I was very annoyed that the piggy tomato was deemed kosher; the rabbi on duty gently implied that I needed to chill out.)

However, not everyone is sanguine that test-tube chicken and fruit-fly-larvae tempeh will pass the kashrut test. One rabbi told JTA that haredi Orthodox will be far less enthused than the religious Zionist rabbis interviewed by SuperMeat! The former are more likely to factor in the future of the planet in their reasoning than the latter. Rabbi Doctor Mark Goldfeder, Senior Fellow at the Emory University Center for the Study of Law and Religion, also raises an eyebrow, metaphorically speaking. (Or maybe literally. I don't know. I interviewed him over the phone.) "Even if you could get past technical Jewish law minutiae [such as questions about the microscopic size of the baseline material used], I don't think there will be widespread adoption of these products, because people will be concerned about the '*maris ayin*' issue," he said. (*Maris ayin*, or *marit ayin* in non-*Ashkenozis* Hebrew, means "appearance to the eye." It means that things that might be interpreted as breaking the rules of Jewish law are banned, even if perhaps they don't. So eating General Faux's Chicken—thank you for that joke, Gabe Sanders—might still be forbidden because *would think* you were eating non-kosher food whether you were or not.)

I still fantasize about eating spaghetti carbonara (I've never even tasted it! It sounds really good!), made with pareve yet super-piggy bacon, or a lab-spawned kosher lobster roll, or prosciutto-wrapped melon made with a fine tissue of fruit-fly larvae protein that tastes like the finest Tuscan prosciutto. But I'm not holding my breath. Then again, by the time I started writing this story and the time I finished, SuperMeat! took in an additional \$15K.

Marjorie Ingall is a columnist for Tablet Magazine, and author of Mamaleh Knows Best: What Jewish Mothers Do to Raise Successful, Creative, Empathetic, Independent Children.