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Merging Pig with Soy

Raw Egg Nationalist

"You may live to see man-made horrors beyond your comprehension."

What do you get if you cross a pig with a soybean?

If you're waiting for a punchline, there isn't one. This isn't a joke. It's a genuine question, but one we already know the answer to. You get Piggy Sooy, that's what: a soybean that grows pig protein inside it.

Piggy Sooy is another one of these “foods of the future” we keep being told about. But as with lab-grown meat and plant-based eggs and insect flour and cockroach milk, there’s more to this eldritch abomination than feeding billions of hungry mouths and making sure we don’t boil the planet to death with our carbon emissions. The foods of the future are the future of food: patented and corporate controlled, just like everything else. And that’s not a future we want. Growing corporate control of the food supply, and with it the abandonment of the foods our ancestors consumed, has already been a disaster for our health and the planet. We need less corporate food, not more.

Piggy Sooy was announced by startup Moolec in June of last year, as part of its “Meat Replacement Program.” Like most other companies in the “foods of the future” or “alternative protein” space, Moolec want to displace traditional meat products from the market. With Piggy Sooy, the target is sausage and burger meats in particular. Using gene-editing techniques, Moolec claim to have increased the protein content of soybeans by getting them to grow porcine myoglobin—pig protein—inside them.

These patented soybeans are a genuine transgenic product: part plant, part animal. Other similar products, like so-called “beef rice,” which also recently made the news, are different in one important respect. With beef rice, scientists haven’t crossed cows with rice; they’ve used the physical structure of rice grains as scaffolding for the artificial growth of beef cells. There’s no exchange of genetic material, though there’s likely to be genetic engineering involved at some level, probably with the beef cells (growing meat in a lab involves special kinds of cells called “immortalized cell lines” that are made to replicate endlessly, like cancer, usually through the use of radiation or genetic engineering). With beef rice you get a hybrid product, mixing the nutritional profile of rice, mainly carbohydrates, with that of beef, mainly protein and also fat, but you’ve not got a new organism.

Moolec have gone one step further by incorporating pig genes into soybeans. The company never wastes an opportunity to tell us that the beans themselves even have a pink hue. How cute! All that's missing is a curly little tail and an oink.

Piggy Sooy has now been approved by the U.S. Department of Agriculture. Moolec can plant and transport its porky beans without any kind of permit. Before the approval was issued last month, Moolec's stock had sunk from a high of $20 per share in January 2023 to $1.15, but then it rallied significantly, more than doubling in a single day.

In response to the approval, Moolec's CEO and co-founder Gaston Paladini said, "We are unlocking the power of plants by leveraging science to overcome climate change and global food-security concerns. I am very proud of the Moolec team, creating value for shareholders and the planet at the same time." Shareholders *and* the planet: everyone wins, apparently. The company has already secured $30 million in funding for R&D and scaling, and it's looking for even more money. It has a deal to supply 15,000 tons of soybeans annually.

Moolec's business model will involve selling the beans as they come, without any kind of refining: there will be no attempt to separate the pig-protein component from the rest of the soybean. They also want to license their product to other companies for planting, which of course they can do, because the product is patented.

The company has plans beyond soybeans. Their broad aim is to use what they call "molecular farming" to turn a variety of plants and even microorganisms like yeasts into miniature bioreactors, removing the need for actual bioreactors—huge metal contraptions in laboratories that cost massive amounts of money to buy and run. Moolec already have a range of other products planned, including a new GMO safflower oil, and plants and yeasts that produce bovine proteins like chymosin and myoglobin. Maybe they'll create real beef rice too.

Piggy Sooy may end up being a hugely profitable venture for Moolec, or it may provide nothing more than some short-lived publicity. The company's share value is already back to around $1.15 at time of writing. I wouldn't recommend you rush out and buy Moolec shares just yet, especially not if you consider the fortunes of other players in the alternative-protein industry. The two big beasts in "plant-based meat," Impossible and Beyond Meat, have both seen their stocks plunge along with demand for their products, and they've had to disguise massive layoffs as "restructuring" in the name of efficiency. Nobody really buys this—just like nobody buys Impossible or Beyond burgers. Makers of lab-grown meat aren't doing any better either. Lab-grown meat was recently described by *The New York Times* as "the revolution that died on its way to dinner," after a series of high-profile scandals and disappointments. *The New York Times* failed to pick up on my reporting about the links between one manufacturer, GOOD Meat, and the Chinese military's bioweapon program—yes, I'm being serious—but the PR's bad enough for CEO Josh Tetrick anyway, without further helpings of ignominy and shame.

We should be sceptical about every single claim made in favour of Piggy Sooy, as we should be for all claims made about "foods of the future." That means claims about everything from their profitability to their palatability. Though I haven't seen any detailed nutritional or environmental information for Piggy Sooy, there's no reason to take its creators at their word about how much protein they've managed to add to conventional soybeans, or about the potential emission reductions vis-à-vis pork produced in the traditional manner.

Consider beef rice. The creators of beef rice of course had to prove that their product has superior environmental credentials to beef. By their calculations, 100 grams of beef rice would release an eighth of the carbon dioxide of 100 grams of beef: 6.27 kilograms versus 50 kilograms. And, what's more, beef rice would be more affordable, at a seventh of the price per kilo of beef.

These claims evaporate under scrutiny. Beef rice contains just 8 percent more protein and 7 percent more fat than normal rice. The product is neither beef nor rice, but something in between. Perhaps the best way to think of it would be as the worst of both worlds. If you're simply comparing 100 grams of beef rice to 100 grams of beef, as the creators of beef rice do, you might as well be comparing the proverbial apples and oranges. 100 grams of beef rice doesn't contain anywhere near as much protein as 100 grams of beef, and it's the protein that we all care about.

What you'd need to do is compare equal quantities of protein, not product. Normal white rice has roughly 2.5 grams of protein per 100 grams; an average piece of steak will have around 30 grams of protein per 100 grams. Even if beef rice has 8 percent more protein than normal rice, that's still less than 3g of protein per 100g. That means you'd need ten times 100 grams of beef rice—a full kilogram of rice—to have roughly the same amount of protein as in 100 grams of steak.

Now re-do the calculations, and we see that beef rice releases more carbon dioxide and costs more than beef to get the equivalent amount of protein. Would you believe it?

This keeps happening with these foods of the future. It happened sensationally last year when a detailed study out of UC Davis showed that lab-grown meat, grown at scale, would release 25 times more carbon that traditional beef agriculture. As soon as the calculations are out of the hands of the makers of these new foods and shills like the Gates-funded Good Food Institute, the numbers tell a very different story.

The validity of the nutritional and environmental claims is an existential issue for these products—it's why they've been created in the first place, or so we're told—but there are more worrying questions about the safety of these products, both for ourselves and for the wider environment.

Human beings have no history of eating soybeans that have been crossed with pigs. We don't have high-quality long-term health data, and we're not going to get any before the product hits the market, which will,

presumably, be quite soon. This is true of all genetically modified products that are already on the market, whether we're talking about grains like corn that have been directly modified, or so-called "synthetic biology" products, like Brave Robot vegan ice cream, which are made with genetically modified organisms but don't actually contain any residue of those organisms (e.g. a genetically modified yeast is used to produce artificial milk proteins that are then used in the ice cream, but the yeast itself is filtered out of the final product).

Nobody has done long-term feeding studies on animals, let alone us. There are no double-blind studies, science's gold standard for testing. Instead, apart from our instincts and wisdom about what humans should and shouldn't be eating, we must rely on general scientific knowledge about genetic engineering and on epidemiological studies—observational studies conducted out there, in the chaos of the real world—to give us some idea of the potential effects of producing and eating genetically modified food.

Observational evidence regarding genetically modified corn, for example, suggests a clear link between consumption and worsening obesity in the U.S. It's been noted by researchers that not only is there an almost 1:1 correlation between corn consumption and obesity, but the increase in obesity in recent decades almost perfectly matches the increase in the percentage of corn grown in the U.S. that is genetically modified. These relationships are much closer than those between, say, calorie intake and obesity or sugar intake and obesity over time. Genetically modified corn has had genes inserted that make it produce its own insecticide, and many insecticides and herbicides are known to have obesogenic effects, that is, to cause weight gain. Some obesogens, like BPA, encourage gorging by stimulating the body's endocannabinoid system, while others, like the herbicide chlorpyrifos, subtly reduce the body's metabolic rate, which means weight gain is possible even if you don't overeat. Interestingly enough, a recent study showed that the resting metabolic rates of

America adults have dropped significantly since the nineties, when genetically modified corn was introduced, by up to 7.7 percent for men and 5.4 percent for women.

One concern is that transgenic material—the genes inserted into a product like Piggy Sooy—might end up being incorporated into the genome of consumers, with potentially harmful effects. This is a worry I've raised with regard to lab-grown meat, since the cells that are used to make it essentially function like cancer, replicating endlessly. Immortalization of animal cells, as it's called, may be achieved through the use of actual cancerous cells, or by activating or inserting genes that cause rapid cell division ("oncogenes"). It might sound far-fetched to suppose that eating a form of cell that behaves like cancer might actually give you cancer, but we know that the human genome has acquired hundreds of genes "horizontally" (i.e. from sources other than our parents and ancestors, such as bacteria); that whole genes pass from the food we eat into our blood; and that horizonal gene transfer is a central part of the progression of cancers. Studies have detected DNA related to genetically modified crops in the genomes of livestock species, and shown that transgenic material ends up in the blood, liver, and brain tissues of lab rats fed genetically modified food. The longer the rats were fed the food, the more genetic material ended up in their tissues. That's bad.

At best, with regard to the risk to humans, an honest sceptic can only say "We don't know"—and for me, that just isn't good enough. I refuse to be a glorified lab rat.

Unfortunately, the planting of genetically modified crops is making it harder to avoid being one, because horizontal gene transfer also takes place within the wider environment. If transgenic material spreads widely in the environment, we may have no choice but to consume genetically modified plants. We've already seen hybridization occur in the wild between genetically modified and wild varieties of canola, for example. If large quantities of Piggy Sooy are planted, perhaps we might see other kinds of beans or wheat starting to grow porcine myoglobin inside them

—again, with unknown effects. The simple truth is, once genetically modified crops are out there, growing, we can't stop the flow of genetic material—and don't believe anyone who tells you otherwise.

So what's the point of these products if they aren't better for the environment or for us? Why do these companies bother—especially if they aren't even making any money from them?

Products like Piggy Sooy can be patented and owned in ways that bog-standard pork and bog-standard soybeans can't, which allows corporations and startups to control exactly what happens with their product: who uses it, where, when. It also ensures the lion's share of the profits flow directly back to them and not, say, to the farmer who plants the genetically modified seeds and harvests them. Yes, many of these new startups like Moolec aren't making any money, but they—and industry investors—are banking on a time, in the near future, when the food landscape has been radically altered in their favor, even more so than it already is.

The transfer of control of the food supply—away from small-scale local producers to massive corporations headquartered far from where food is produced—is probably the most profound development in food over the last century. It has certainly had the most profound effects on our health, ushering in a transformation of our diets and lifestyles every bit as far-ranging as the invention of agriculture in the Near East, in the Neolithic, 10,000 years ago. Our ancestral foods—broadly speaking, whole foods locally produced and subject to minimal processing—have been displaced, substituted with novel foodstuffs like seed and vegetable oils, meat produced in factory grainlots and, most importantly of all for our health, modern ultra-processed foods, marketed to us for their convenience, affordability, and addictive qualities. This has been a disaster for our health, and a triumph for big business. The best book on the negative health effects of this dietary transition remains Weston A. Price's 1939 study *Nutrition and Physical Degeneration*. He showed that even the early stages of this transition, with the spread of refined-flour products and canned foods, were responsible for remarkable physical degeneration, not

just in Western populations, but also in tribal and non-Western populations that were in the process of coming to live and eat like us. This physical degeneration has only got worse in the eighty years since the book was written.

Look behind the myriad of brands on your local supermarket shelves today and you'll find just a handful of companies: Nestlé, Pepsico, Danone, Coca Cola, Unilever. Corporations already exercise immense control over the global food supply, but the immanent logic of capitalism demands more, further revolution—or, to use corporatese, the "breaking of new ownership envelopes." And with the "climate crisis" narrative, and the promise of a "plant-based future" in which animal agriculture disappears altogether, corporations have all the backing that they need, ideological and political, for an even deeper consolidation of the food supply that will cut local non-corporate producers out of the food chain for good.

Consider, for example, the vision of diet and agriculture laid out in the "Planetary Health Diet," the World Economic Forum's manifesto for feeding the planet and saving it at the same time. In order to reduce carbon emissions in line with the Paris Climate Accords, and to feed a population of 10 billion people a healthy diet by 2050, animal agriculture as we know it will have to cease. In its place will be an intensified and rationalized system of crop agriculture and high-tech innovation. People the world over will eat a diet composed almost entirely of plant foods and novel alternative proteins, and all of the foods they eat—from new high-yield genetically modified breeds of wheat and soy, to lab-grown meat and farmed insects—will be produced and therefore owned by corporations.

This is how you explain the strange persistence of products like Piggy Sooy: products that nobody asked for, nobody buys, and nobody—not even the producers themselves—seem to benefit from. Corporate food producers are gearing up for a new Agricultural Revolution: The World Economic Forum explicitly calls it that.

Corporate food producers are looking to a near future when, whether through inflation and artificial scarcity, or as a result of punitive carbon taxes or even forms of "carbon rationing," most people won't have a choice whether they eat plant-based meat or not. An op-ed in *The New York Times* in the summer of 2022 made this clear, and even argued for it as a positive outcome. "You want to buy meat? In this economy?" was the headline. The author, Annalise Griffin, noted how "historically, cost has been a powerful force that has changed American's diets," and argued that "inflation has the potential to drive welcome change for the planet if Americans think differently about the way they eat." Griffin even praised the 1917 Lever Act, which allowed the federal government to requisition food from ordinary people to prevent hoarding. After the events of the pandemic, nothing would surprise me—not even a door-to-door meat collection.

It will be Impossible burger or no burger. And most people want to eat burgers.

As I argue at length in my most recent book, *The Eggs Benedict Option*, in order to preserve our health and our freedom, we need to break away from the corporate food system before it's too late, and return to local production of the foods our ancestors thrived on.

I won't pretend that doing so will be easy. Just look at what's been happening in Mexico. Under President Andrés Manuel López Obrador (AMLO, for short), Mexicans decided that they don't want any more U.S. genetically modified corn, or the harmful products, like glyphosate, that are used to treat it. They don't want to import genetically modified corn, and they don't want to grow it either—meaning they don't want to buy seeds that are produced by American companies. Corn is a hugely important food for Mexicans: not just for their cuisine but for their sense of national identity. They, like their Aztec ancestors, are "the people of corn"; although, as Michael Pollan showed in *The Omnivore's Dilemma*,

Americans are the real people of corn, since they now consume so much of the stuff they basically show up as walking tortilla chips in radio-isotope testing.

Almost 90 percent of American corn is genetically modified and the U.S. produces so much of it that finding places for it to go is one of the most important priorities of the U.S. government. Billions of dollars in exports to Mexico are at stake. So for six years, the U.S. government has been lobbying hard on behalf of agribusiness interests to prevent AMLO from making good on his promises. By turns the U.S. government has cajoled, suggested and threatened, and the Mexicans have bravely resisted.

A few months ago, the Mexican government produced a 200-page formal rebuttal, packed with scientific data, laying out the full case against the importation and growth of genetically modified corn. The document argues that the use of genetically modified seeds does not increase yields, as claimed; that it does not reduce reliance on agrochemicals, as claimed; that it is not safe for the environment or Mexico's native corn breeds; and, just as importantly, that genetically modified crops are not safe to be eaten by humans. The sale and cultivation of genetically modified corn is, the report states, a threat to "native corn varieties, the gastronomic tradition, the rights to health and the environment, as well as the protection of indigenous peoples, peasant communities and cultural heritage of Mexico." This is a very powerful statement of what food sovereignty—real food sovereignty—really means. Food sovereignty is about much more than nutrition: food is an identity, a way of life. What we choose to eat, or have forced upon us, is a political issue at its very core. The sooner we realise this, and understand that products like Piggy Sooy are not novelties, but assaults on nature itself and our very freedom, the better.

Raw Egg Nationalist writes extensively on nutrition, exercise, and masculinity. He is the author of the *Raw Egg Nationalism Cookbook* and the editor of *Man's World*.