

The New Agrarian Revolution Is Upon Us

How investors can benefit from the irreversible trend towards healthy and cruelty-free food



By Jim Mellon, Executive Chairman Burnbrae Ltd and Executive Director Agronomics Ltd

Towards the end of last year, I published my seventh book, one called “Moo’s Law”. This title was a shameless riff off the famous “Moore’s Law” invented by Gordon Moore 53 years ago. This law, related to semiconductors, posits that as time goes on, efficiency rises and costs fall – precipitously.

But the law also applies to cell-cultured and precision-fermented foods, and hence the name of the book, “Moo’s Law”.

We are firmly in a new age of agriculture, and thank heavens the dawning of this era has arrived just in the nick of time.

I was in Glasgow recently for the 26th UN Climate Change Conference, COP26. It was there that I learnt that the FAO, the United Nations’ Food and Agriculture Organization, had declared that global greenhouse emissions caused by animal husbandry as well as by deforestation (which invariably is linked to growing crops for animal consumption) had risen by 17% in the past three decades.

The noxious gases emitted by agriculture and the related deforestation are estimated to be 31% of the total, and some of them, notably methane, are of the worst possible kind.

While our world burns and islands are about to be washed away, the intensive-farming industry – the principal source of animal protein in the world – keeps growing, spewing out bad stuff and polluting our world in a disastrous way.

We need to do something about it.

Approximately 10 billion animals (weighing twice as much as the whole human population) are kept in feedlots, cages and sheds at any one time – all destined for our consumption. Mankind eats 80 billion animals every year, and about 2.5 trillion fish. These numbers keep growing as a result of increasing

meat consumption in developing countries, particularly in India and China.

This means that more and more arable and forested land is turned over to growing crops to feed animals. About 70% of all farmlands is used for that purpose already – which is highly wasteful and environmentally destructive.

This is because animals are notoriously inefficient converters of plant protein to meat. A cow, for instance, takes in 25 times more protein than it puts out; a chicken is between 6 and 9 units of input for one unit of output.

Putting this in perspective, the products which are being grown in labs/factories (so-called cell-cultured meats) will represent 2.5 units of input for one unit of output. If we regard the cow as a factory – which it is – it is therefore an inefficient one. The factories that will replicate the production of cows – without the animals – are incomparably more efficient, especially as they don't need to produce hides, viscera, tails and heads.

And these cell-cultured products are about to appear in markets on a wide scale. I estimate that cell-cultured fish will be on the market as early as the end of 2022, that ground meats (patties, sausages and pasties) will be on the market by 2023, and chicken nuggets might be widely on sale as early as the middle of 2023. Some already are available in Israel and in Singapore, both food-insecure countries.

Cell-cultured products, in a nutshell, use stem cells (now mostly derived from stem cell banks, not from animal sampling) to start the process of growing the key components of meat – muscle and fat – in what are known as bioreactors, which are large stainless-steel cylinders. There, these stem cells are bathed in nutrients (e.g. sugars and starches), which are known as “media” and encouraged to divide by heat (only 50% of the energy used in conventional farming) and growth factors. These factors used to be very expensive but have come down dramatically in price in the past few years.

A simple example of this is that a small sample of cells can produce 7 to 8 cows' worth of meat in 40 days, which is about 3,000 kg, versus 28 months for the same meat grown through live cows.

Jim Mellon Burnbrae Group and Agronomics

Jim Mellon is one of the most successful investors of our times. More than that, he is an investor with a conscience. In his article, he lays out how investors can make tons of money doing good. The only way to go, really.

With his *Burnbrae Group*, Jim Mellon seeks out opportunistic investments and capitalises on fundamental global emerging trends throughout the world.

Agronomics Limited is a London listed company focusing on opportunities within the field of cellular agriculture – to end cruel animal husbandry and, at the same time, make money for its investors.

Furthermore, this meat – which is identical to meat from the best in species – contains no bacteria, no antibiotics and no hormones.

Currently, 80% of all antibiotics used globally go into farm animals, creating the risk of antimicrobial resistance, which in turn creates a bacterial pandemic risk.

Literally anything that has stem cells – for instance meat, fish or some materials, including leather and cotton – can be produced in this way and, indeed, already is being so produced.

This type of production produces almost no emissions, uses only 1% of the land that is used by conventional intensive farming, almost none of the water currently used, and produces high quality food with a much longer shelf life.

And the story doesn't end there; readers will be familiar with the growth of plant-based meats (Quorn, Beyond Meat, Impossible etc.) as well as with the increasing penetration of plant-based milks such as Oatly. These have been taken to consumers' hearts, particularly in the pandemic, and that is great.

But – and this is a big but – plant-based meats and milks are not necessarily better for human health than conventional foods as most remain highly processed. Furthermore, it is difficult to get great patents around plant-based foods. This is not the case with cell-cultivated foods, where intellectual property tends to be much stronger, and there are clear-cut human health advantages, including the absence of fecal contamination and no antibiotics or hormones.

So-called precision-fermented foods, particularly in respect of dairy – are coming alongside cell-cultivated meats and

fish. These precision-fermented foods are going to drive the conventional dairy industry out of business – and within a decade. This is because these techniques allow the manufacture (without cows) of the exact same key components of cow's milk – whey and casein.

This means that powders of key ingredients can be added to water to produce “real” milk at cheaper and cheaper prices.

Dairy cows, which endure brutal and short lives, emit more emissions than any other form of cultivated animal – and their gradual disappearance from the large herds which produce commercialized milk cannot but be a good thing.

I personally am motivated to get this industry – the so-called cell-ag industry – moving in a big way, because I can't stand the cruelty that intensive farming represents. Chickens, as an example, live less than 30 days typically, are three times the size they were in 1950 and can hardly move around in their short lives. Appalling.

But others might be motivated by improving their health with novel foods, reducing emissions, reducing antibiotic use, water misuse or a host of other factors. Whatever your reason for jumping on board this train doesn't matter – just jump on board!

We set up a London-listed company a couple of years ago to invest in the industry and it is probably the largest single global investor in the field now – it is called Agronomics.

Check it out.

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