



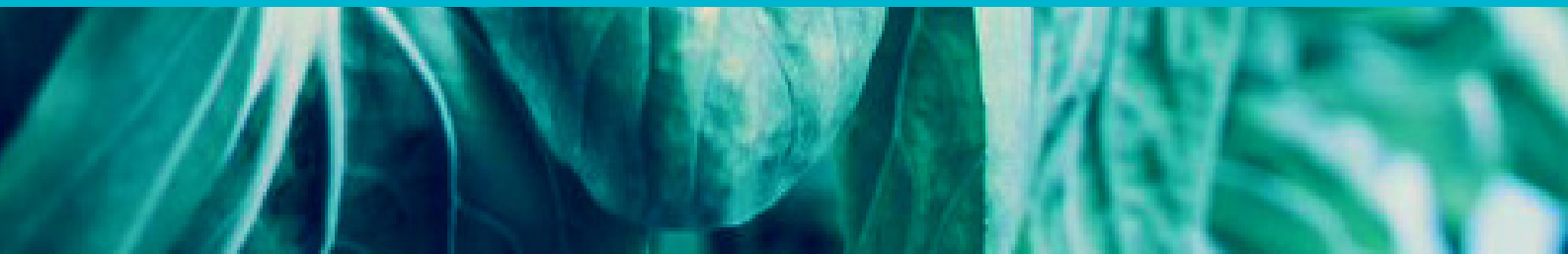
FUTURES PLATFORM



Futurists' Highlights

# Food Industry

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## Authors



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Max is the Foresight Analysis Manager at Futures Platform. He is responsible for supervising and developing the foresight analysis process. He has worked with numerous clients to help them prepare for the future.



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## Methodology

In the interconnected digital age, what happens in one industry impacts another. While disruption once came primarily from within one's industry and by established players alone, today's most disruptive shifts often first emerge outside of one's own industry.

At Futures Platform, our academically-trained futurists continuously monitor industries from a holistic vantage point to identify early signals of such disruptive changes. Through [our collaborative foresight platform](#), we help organisations look beyond their industries and anticipate the most impactful shifts reshaping the businesses, societies and values of tomorrow.

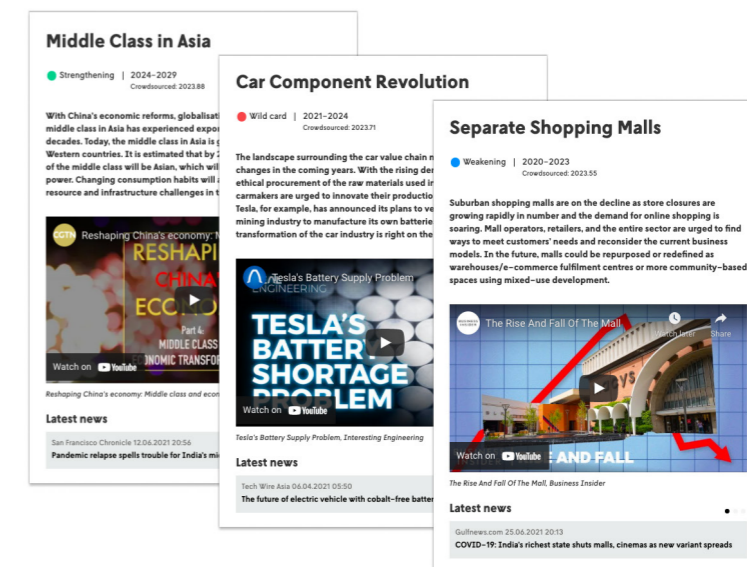
The phenomena featured in this report have been identified through [Futures Platform's robust process](#) centred on **continuous foresight** and **cross-industry horizon scanning** practices.

Phenomena are identified based on the following criteria:

- **The phenomenon must have a significant future impact on several industries.**  
The estimation of the potential impact is based on the team's analysis, which compares the phenomenon with available data and industry outlooks.
- **The topic must appear several times in well-respected media.**  
Extensive coverage of a subject indicates its potential for greater, niche-market-exceeding impact. However, there may be exceptions to this criterion in the cases of wild cards and weak signals.
- **The phenomenon must have a developmental direction.**  
The identified phenomenon is either getting more influential, or it is becoming weaker, ending, changing directions, or merging with another phenomenon.
- **The phenomenon must have a sufficiently independent and robust core.**  
Even if we spot a change signal with novelty value, we do not necessarily identify it as an independent phenomenon if it is directly linked to an existing trend.



## Phenomena Cards



### Phenomena Types

**● STRENGTHENING**

The phenomenon is becoming more common or acute during the given timeframe. Most of its change potential is still ahead.

**● WEAKENING**

The phenomenon is becoming more unusual. During the given timeframe, most of its change potential or value has already occurred.

**● WILD CARD**

A possible but not probable event or change. The probability within the given timeframe is between 5% to 30%.

**● WEAK SIGNAL**

A small emerging issue in the present. At the given timeframe, it is still hard to say whether it will become a trend.

### Phenomena Timestamp

All Futures Platform phenomena have an expert-assessed timeframe within which the phenomenon is anticipated to either accelerate or decline. Our team uses [S-Curve Analysis](#) and [Trend Impact Analysis](#) to reason the probable time range. Each phenomenon also includes an additional **crowdsourced timestamp**, which is the median average based on the assessment of all Futures Platform users.



## PHENOMENON 1

# Animal-Free Dairy Products

● STRENGTHENING | 2022-2024  
Crowdsourced: 2022

Several start-ups are utilising synthetic biology to create new types of completely animal-free dairy products. For example, the biotech start-up [Perfect Day](#) has developed a limited run, animal free-dairy ice cream by making animal proteins from whey and casein without using animals. Animal-free dairy products will be more environmentally friendly than traditional dairy and surpass plant-based products in terms of taste and texture.

## Background

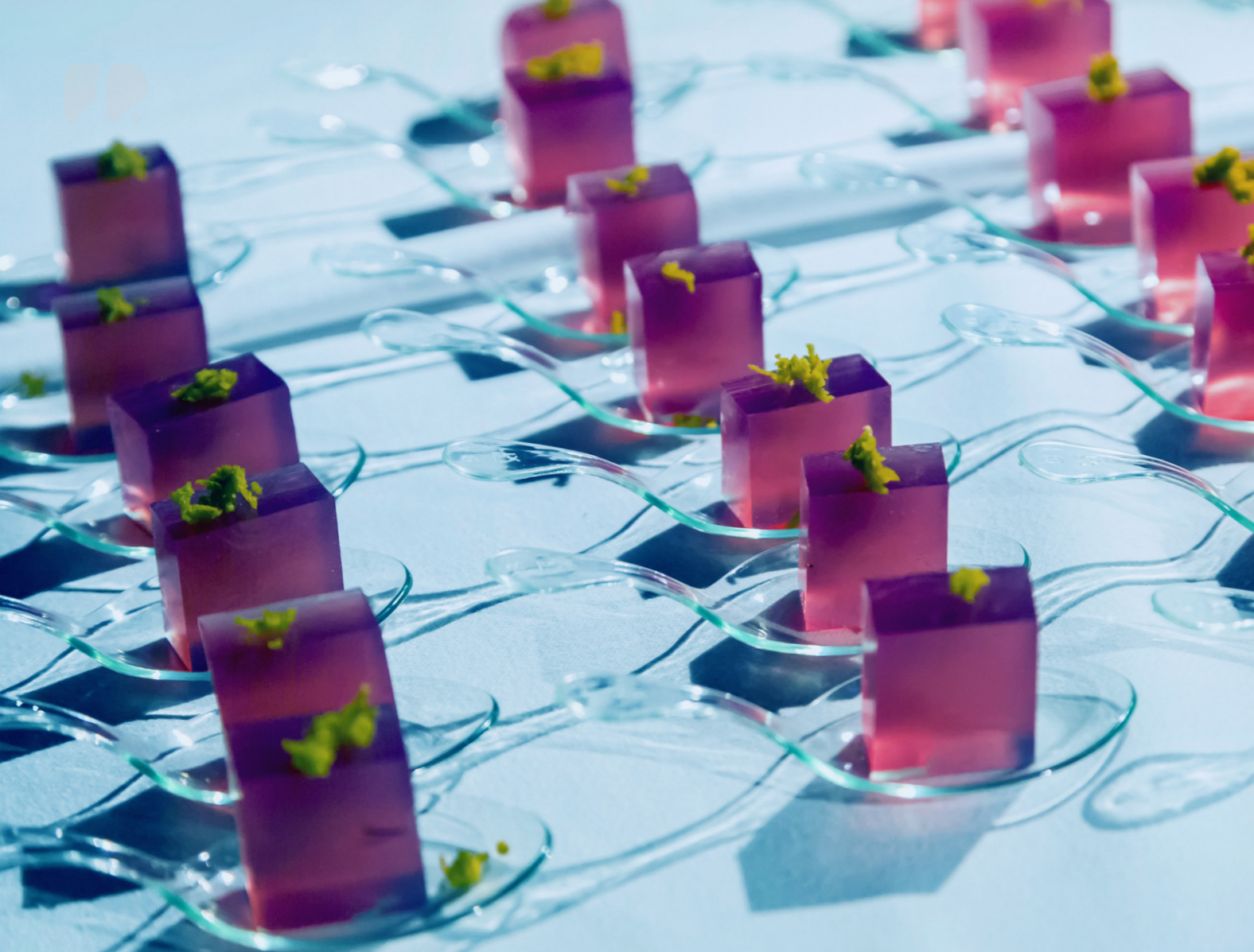
There are already plenty of plant-based dairy products on the market, such as plant-based milk and ice creams made from coconut, almond, and soy. Advances in biotechnology have also enabled manufacturers to develop novel animal-free products with improved tastes, fragrances, texture and nutrition. For example, the biotech start-up [Perfect Day](#) took an entirely new approach with its dairy-free ice cream containing whey and casein, which are identical to the protein ingredients in cow's milk. The ice cream is made through a fermentation technique converting plant sugar into whey and casein proteins.

Although the company has no interest in keeping the ice cream business and is planning to focus on the B2B market by selling the animal-free proteins they develop to food producers, their innovation has still paved the way for a breakthrough in the dairy industry. [Dozens of other start-ups](#) have entered the market since then and begun the production of animal-free dairy products. Considering [the large funding](#) Perfect Day received from investors, the market for animal-free dairy foods has the potential to attract large numbers of long-term investors. However, due to high production costs and the complexity of mimicking dairy proteins and fats, it will require many years until significant amounts of mass-produced animal-free dairy products hit the shelves in grocery stores.

## Future Directions

To be able to compete and achieve cost parity with traditional dairy products, start-ups will likely utilise plant-based alternatives, such as proteins from peas, or fats and oils from coconut, in animal-free dairy products. When products reach commercial-scale production, it will be easier to compete with pure plant-based products as they have the upper hand in taste and nutrition, which are indistinguishable from regular dairy products.

As environmental and ethical concerns with animal products increase, animal-free dairy products may lead to a more sustainable world with the advancement of synthetic biology. They could tackle the negative impacts dairy production and consumption have on the planet by reducing greenhouse gas emissions and combat the scarcity of water and arable land.



## PHENOMENON 2

# Manipulated Taste Experience

● STRENGTHENING | 2023–2028  
Crowdsourced: 2027

As humankind's need to utilise new forms of food grows, the number of initiatives focusing on manipulating taste experiences is also becoming more common. For instance, miraculin, which can be extracted from fruits or manufactured artificially, makes sour taste like sweet. Manipulating the sense of taste may prove to be a viable option in turning healthy, eco-friendly and nutritious foodstuffs into delicious alternatives to ordinary food.

## Background

Several change drivers such as the climate change, growing population and scarcer resources, and the Western health crisis, force humanity to look for healthy and environmentally friendly food alternatives without compromising the taste experience. Artificial foodstuffs, molecular gastronomy, and the increasing understanding of how the sense of taste works, may help in solving these problems.

The sense of taste can be manipulated in many ways. For example, glycoprotein (Miraculin) contained by the miracle berry (*Synsepalum dulcificum*) attaches itself to the tongue's tastebuds and makes sour foods taste sweet. Its effect can last for over an hour. Miraculin could, for example, help a person lose weight by eliminating the urge to eat something sweet. However, currently, it remains as a curiosity used mostly in [food tasting events](#).

The taste experience is created in the brain through a combination of multiple sensory stimuli, and different basic tastes manifest in different parts of the brain. Thus, brain researchers have also become interested in manipulating the sense of taste. [Experiments with mice](#) show that manipulating different parts of the brain can affect the sense of taste. For instance, by manipulating the sense of sweet, the mice reacted to water as if it was sugar. In the future, neurogastronomy could be used to tailor taste experiences according to individual needs.

## Future Directions

Thanks to neurogastronomy, taste manipulation could become commonplace. Healthy but tasteless or bad-tasting foods could be made delicious by manipulating the brain's neurons. In this way, nutritious and environmentally sustainable, but otherwise undesirable foods could be made more palatable. Manipulating the sense of taste could also help other artificial foods become more widely accepted, and thus provide a solution for the problems of food production.

For consumers, taste manipulation could offer new taste experiences without any health disadvantages. By directly affecting the brain's taste centres, entirely virtual taste experiences could be created, which would enable culinary tourism without leaving home. Manipulating taste could also increase the popularity of "flavour tripping" as a pastime. Using AI to develop entirely new flavours or improve the existing ones could revolutionise the food industry altogether.



### PHENOMENON 3

## Farming without Pesticides

● WILD CARD | 2024–2028  
Crowdsourced: 2027

Mass death of bees has led to a loss of productivity in farmed crops as they do not pollinate the way they used to. Recent studies show that a chemical cocktail from farming, including pesticides and insecticides, has also spread to wild flora. Hence, there is a possibility that agriculture will have to become pesticide-free in the future.

### Background

Scientists have discovered a chemical cocktail to be the likely reason behind the mass deaths of bees. Called [neonicotinoids](#), these chemicals had been suspected and are now proven to be harmful to the bees. However, most recent studies suggest that the chemical cocktail that stuns bees is a mix of pesticides and insecticides.

[A Cornell University study](#) shows that bee colonies accumulate pesticides, which spread to nature besides farmed crops. Wildflowers contain a cocktail of chemicals used in farming, and so do bees. As Scott McArt, lead author of the research, commented, “Surprisingly, there is not much known about the magnitude of risk or mechanisms of pesticide exposure when honeybees are brought in to pollinate major agricultural crops.”

These studies show that chemicals used in farming spread far and wide in the ecosystem. In parallel with the rapidly declining bee populations around the world, there has also been a drop in the number of crops because bees are not there to do their job.

[A United Nations report](#) argues that pesticides are not needed to feed the world. However, pesticide companies and many farmers who have used them for decades disagree.

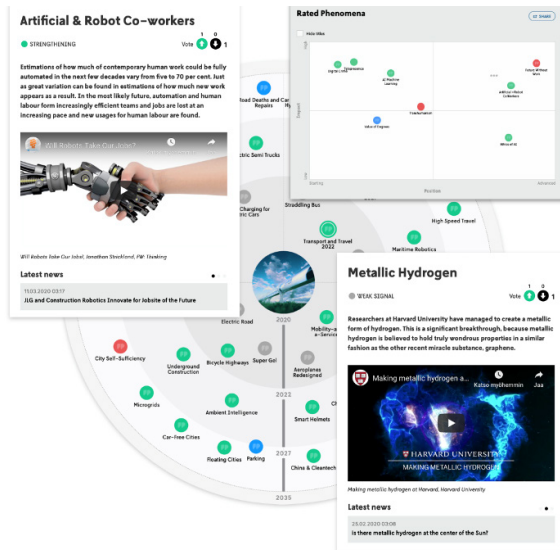
### Future Directions

It is possible that farming will have to stop using pesticides in the future. If pesticide-free farming becomes imperative and we simultaneously want to meet the rapidly increasing nutrition needs of the growing population, agriculture would have to go through radical changes.

First and foremost, this may mean that GMO research, testing, and farming will expand drastically, particularly as regards pest and disease-resistant crops. This would require profound changes in both international and regional legislation, regulations, and policies. If GMO research is out of the toolbox, it may also open up vast organic food and clean farming tech research, new types of crop testing and farming, and bring international investments to increase the amount of arable land for food production.



## About Futures Platform



Futures Platform is a collaborative foresight solution that brings an AI-powered digital platform together with the expertise of academically-trained futurists.

Our fast-growing foresight database includes 700+ content cards with compact, easy-to-digest insights and scenario descriptions of the most impactful future changes across industries.

Our visually engaging, collaborative foresight radars map interconnections between phenomena and allow teams to co-shape future strategies together.

**START YOUR FREE TRIAL**

## An experienced team to support you



Our team of futurists continuously monitor changes and keep Futures Platform's content database up to date.

They also regularly come together with our clients to support processes, discuss future changes and share foresight best practices.

*"Futures Platform is a one-stop platform for searching signals, trends, and wild cards. It's like Google, but for foresight. If you are looking for a place to google the future of topic X, then it's worth exploring this platform."*

Deunchalerm Khiewpun,  
Corporate Foresight Researcher, DTGO



Canada Revenue Agency







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