

## A SPARKLING SOLUTION

Why do tiny bubbles rise up when we drop an effervescent tablet into a glass of water? Answer: Probably because it contains potassium bicarbonate—a potassium compound that releases carbonic acid in the water. Even more important than the fizz is the health-promoting effect of potassium. The World Health Organization recommends that we consume much more potassium instead of sodium. A potassium-rich diet reduces blood pressure and thus the risk of a stroke. The potassium compounds that Evonik develops for the food industry don't just form refreshing bubbles—they also lay the foundation for healthy nutrition.

## A LOOK AROUND THE WORLD

Innovations from science and research

# Creepy Crawlies against Cancer

A study from Italy demonstrates that insects have health-promoting properties

Around two billion people worldwide regularly have insects on the menu. Insects are even gaining in importance in Western countries as an alternative source of protein. Scientists at Teramo University in Italy are now advocating that people eat crickets, caterpillars, and grasshoppers. They have found out that the regular consumption of insects can protect against cancer because the creatures contain large amounts of the vitamins A, C, and E. These vitamins



are antioxidants that shield the body against free radicals and help prevent pathological mutations in cells. According to the study, insects contain a lot more cancer-inhibiting compounds than orange juice and olive oil. Herbivorous species such as grasshoppers and silkworms are particularly rich in antioxidants. Besides traps for free radicals, insects also contain other valuable nutrients such as protein, unsaturated fatty acids, and dietary fiber.



### PEOPLE & VISION

**“Our benchmark is meat and the nutrients and proteins it contains”**

#### THE MAN

Mazen Rizk studied molecular biology in Lebanon. He moved to Germany nine years ago to earn a doctorate at the Hamburg University of Technology. For his doctoral dissertation, Rizk was already experimenting with cells. At that time, he was interested in enzymes for the production of biofuels. After obtaining his doctorate, Rizk worked in the research department of a food company that produces yeast extracts that are intended to give products meaty taste. Rizk still studies fungus cells every day. However, he no longer does this as an employee, but as the founder and CEO of MushLabs.

#### THE VISION

Together with his team at MushLabs, Rizk is working on developing a healthy and environmentally friendly meat substitute. In the company’s lab, researchers are feeding fungus cells different carbohydrates and proteins under a variety of temperatures and pH values in order to replicate the taste and nutritional content of meat as much as possible. Rizk uses as few additives for this purpose as he can. Although the project is still in development, MushLabs plans to launch the first dishes on the market next year.

# Safety Chain

How blockchain makes food safer

Everyone’s talking about blockchain—even in the food industry. Numerous pilot projects have shown that this data technology can make it easier to trace food and improve food safety. For example, the IT company IBM has developed the Food Trust program, which the US retail chain Walmart is already using in a test to trace the path of salads, mangoes, and

pork. Systems like this can quickly discover sources of contamination, for example, and enable the affected products to be taken off the shelves. Farmers could also benefit from blockchains, which would enable them to prove unambiguously to consumers that the way they raise livestock takes the animals’ welfare into account.

## LESS PHOSPHATE, MORE PROBLEMS

The oceans contain less phosphate than was previously assumed, according to a group of researchers headed by Mike Lomas from the Bigelow Laboratory for Ocean Sciences in Maine (USA). Phosphate is an essential nutrient for every living organism on Earth. The low phosphate content is especially problematic for algae, because climate change is reducing the amount of nutrients in the world’s oceans as it is. On the basis of data collected over the past 20 years, Lomas and his team are recording every change, no matter how small. The researchers want to use the new findings to better forecast the effects that climate change will have on oceans.

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**PERCENT** of India’s inhabitants do **not eat meat**. That makes this South Asian country the world leader for a meat-free diet. A key reason for this is that India’s biggest religions, Hinduism and Islam, have strict food regulations.

### GOOD QUESTION



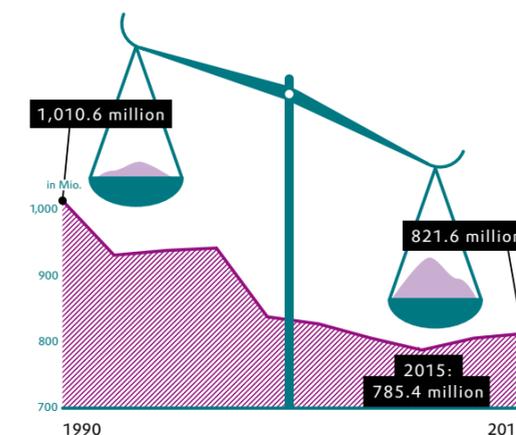
**“Mr Hunter, when will our steaks be coming out of a 3D printer?”**

In one or two years, according to Nova Meat, a Spanish company that is developing a 3D-printed plant-based meat product for future commercial production. It envisages restaurants using rented 3D printers and Nespresso-style capsules to print steaks just prior to cooking and serving, and it claims that the product’s texture will be very meaty. So far, the 3D printing of food has lagged behind expectations. Many factors must be considered. Does the raw mixture have the right rheology? How long does it stay fresh? How can the printer be kept free from microbiological contamination? Today 3D-printed foodstuffs, such as cake decorations, are still niche products, but the growing popularity of alternative meat products could lead to a commercial breakthrough for 3D printing. The advantage of this technology is its ability to produce food on demand, thus enabling personalized nutrition—and reducing food waste.

*Tony Hunter is a global food futurist from Australia. He advises companies that are assessing and implementing new food technologies*

### THAT’S BETTER

## Fighting Hunger



More than one billion people were considered undernourished in the early 1990s. This figure dropped to around 200 million over the next 15 years, even though the global population rose by two billion over the same period. Unfortunately, this positive trend then stalled, and the number of people suffering from malnutrition and undernourishment has been increasing again worldwide for a number of years.

Number of undernourished people worldwide between 1990 and 2018 Source: Statista

\*Estimate