

### Startup company finds the missing link to a milk alternative — cow DNA

By Tom Levitt, The Guardian, adapted by Newsela staff

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As you read the introduction - paragraphs 1 & 2, identify the **PROBLEM** the company hopes to solve:

What **SOLUTION** does the Perfect Day company propose?

First, it was meat grown in a lab. Now get ready for animal-free cow's milk. A San Francisco startup believes it has found a solution for the guilty conscience of consumers who love eating dairy ice-cream, cheese and yogurt, but are against the dairy industry's factory-style farming and its environmental footprint.

A company called Perfect Day has combined yeast, cow DNA and plant nutrients, which are substances such as proteins and vitamins that are essential for healthy growth. The company claims to have created a product identical in taste and nutritional value to cow's milk, but without any udders involved.

### Unappealing Alternatives

Sales of milk alternatives such as soy, coconut, almond and more recently pea milk are expected to be worth more than \$10 billion by 2019. But until now they have not cut traditional milk and dairy production.

What is the problem with the current milk alternatives?

"The alternatives for yogurt, cheese and ice-cream are so bad that people don't even want to try them," Perfect Day co-founder Ryan Pandya said. "Many have been switching to more plant-based diets but when you have to give up cheese, you just think about how much you miss pizza.

The missing ingredient in plant-based alternatives is milk protein.

### A Pinch of DNA, a Little Sugar

How is the Perfect Day company going to make their animal-free cow's milk?

To make the animal-free cow's milk, Perfect Day inserts cow DNA into yeast and adds sugar to create milk proteins through fermentation. Cow DNA is readily available after decades of research by the dairy industry. The milk proteins are then combined with sugar, fats and nutrients to create the final product.

"We're taking plant nutrients and transforming them into animals proteins the same way that cows do, using the same milk proteins as found in cow's milk, but much more efficiently, because we're using a yeast cell not a 2,000 (pound) animal," Pandya said.

Although comparisons have been made with lab-grown meat, Pandya said they are not the same. "Many people initially go 'oh is this like lab or test-tube milk,' but that's wrong. There are no test tubes in our fermentation process, it's just like brewing craft beer. The meat folks are trying to invent technology that doesn't exist today, but our milk is made through techniques in use for more than three decades."

## Dairy Companies are Onboard

There is no sign yet of a commercial lab-grown meat product. Perfect Day said it plans to launch a cheese, yogurt or ice-cream product by the end of 2017. Milk will follow later. It will be priced similarly to organic dairy to start. The company expects to quickly have a lower cost of production than milk.

The startup has already raised \$4 million from investors and been in talks, perhaps surprisingly, with a number of traditional dairy companies.

“The assumption was that we’d be hated by the dairy industry but it’s actually the opposite. They see us as the long-term solution to problems they didn’t even know were solvable,” Pandya said.

Those problems include water pollution and climate change. The world’s quarter of a billion dairy cows are responsible for just less than 3 percent of the greenhouse gas emissions around the world. A study commissioned by Perfect Day found its animal-free milk uses approximately 24 to 84 percent less energy, 98 percent less water, 77 to 91 percent less land, and 35 to 65 percent lower greenhouse gas emissions.

How does the dairy industry feel about this?

## Just Don't Call It Cow's Milk

Why should we care about this issue? Or maybe we don't?

Rather than bringing to an end traditional dairy farming, Pandya expects their milk product to help reduce the need for ever more intensive dairy farm systems.

“We’re here to create another option for people. There is more and more demand for dairy and that is causing increasing factory farming. Everyone agrees we should do less of that and that’s something we’ll actually be able to do,” he said.

However, it seems unlikely they will be able to call their new product cow or dairy milk.

A spokesperson for the U.S. Food and Drug Administration said a product labeled as dairy milk needed to involve the “complete milking of one or more healthy cows.” If a food does not meet these standards then it must be labeled “with a common or usual name or an appropriately descriptive term, and the labeling must be truthful and not misleading.”

List two new questions you have after reading this article:

- 1.
- 2.