

# Vanilla flavoring

*made by yeast\**

Ice cream and many other sweet treats taste like vanilla. Pure vanilla extract comes from the beans of orchid plants, which are scarce and costly. Artificial (or imitation) *vanillin* is produced inexpensively using chemical processes, but many people think it doesn't taste as good. A new alternative, synthetic vanilla, is produced by engineered yeast. It's cheap, and it can be labeled as "natural" since it's produced through fermentation. Do you think products should have to indicate that they contain synthetic vanilla? If so, what should the label say?

***\*This product  
already exists!***



# Vanilla flavoring

*made by yeast\**

*\*This product  
already exists!*

# Caffeine

*made by yeast*

People drink caffeinated coffee, soda, and energy drinks to wake them up, give them energy, and increase their ability to concentrate. Caffeine is naturally found in plants from South America, including coffee plant seeds, cocoa beans, and kola nuts. By engineering yeast to produce caffeine, we could grow this ingredient in the lab, which might be less expensive. Do you think the reduced cost would be worth the potential threat to jobs on coffee and cocoa plantations?



**FUTURE  
IDEA**



**Caffeine**  
*made by yeast*

**FUTURE  
IDEA**

# In vitro meat

*grown in a lab*

**FUTURE  
IDEA**

Meat grown in a lab sounds like science fiction—but it's now possible to grow animal muscle fibers in a laboratory using stem cells. *In vitro* meat isn't yet available in the supermarket, but in the future it could help feed a growing world population using less energy and land than livestock. Some animal rights advocates support this technology over raising animals for meat. Would you choose lab-grown meat over a beef or soy burger?



**FUTURE  
IDEA**

**In vitro  
meat**  
*grown in a lab*

# Golden Rice

*with beta-carotene\**

Golden Rice was developed to provide vitamin A to people around the world whose diet consists mostly of rice. Millions of people suffer from vitamin A deficiency, which can result in serious health problems such as blindness. Golden Rice plants have been genetically engineered so that the edible grains include *beta-carotene*, which your body converts to vitamin A. But Golden Rice has met some resistance: some groups are opposed to it as a genetically modified organism (GMO), and some people think it just doesn't taste very good. Are you concerned about growing and distributing GMO crops such as Golden Rice? Would you eat rice that could make you healthier but might not taste as good?

***\*This product  
already exists!***



# **Golden Rice**

*with beta-carotene\**

*\*This product  
already exists!*



# Coconut oil

*made by algae*

Coconut oil is extracted from coconut meat, and is used as an ingredient in baked goods, fried foods, soaps, and health and beauty products. Most coconut oil comes from trees grown in tropical areas. Researchers have engineered algae to produce *lauric acid*, which is the saturated fatty acid found in coconut oil (as well as palm kernel oil). How do you feel about using or eating oil produced by algae?



**COMING  
SOON!**



# Coconut oil

*made by algae*

**COMING  
SOON!**

# Milk

*made by yeast*

Researchers are developing synthetic milk by inserting DNA sequences from cattle into yeast cells. The yeast cultures produce real milk proteins, which are combined with vegetable fats, calcium, and other ingredients to boost the nutritional value and make the drink taste like cow milk. The company producing “Muufri” suggests that their product is more humane and sustainable than milk produced by cows—and it’s lactose free. What would convince you to drink yeast milk instead of cow milk or other alternatives?

**COMING  
SOON!**



**Milk**

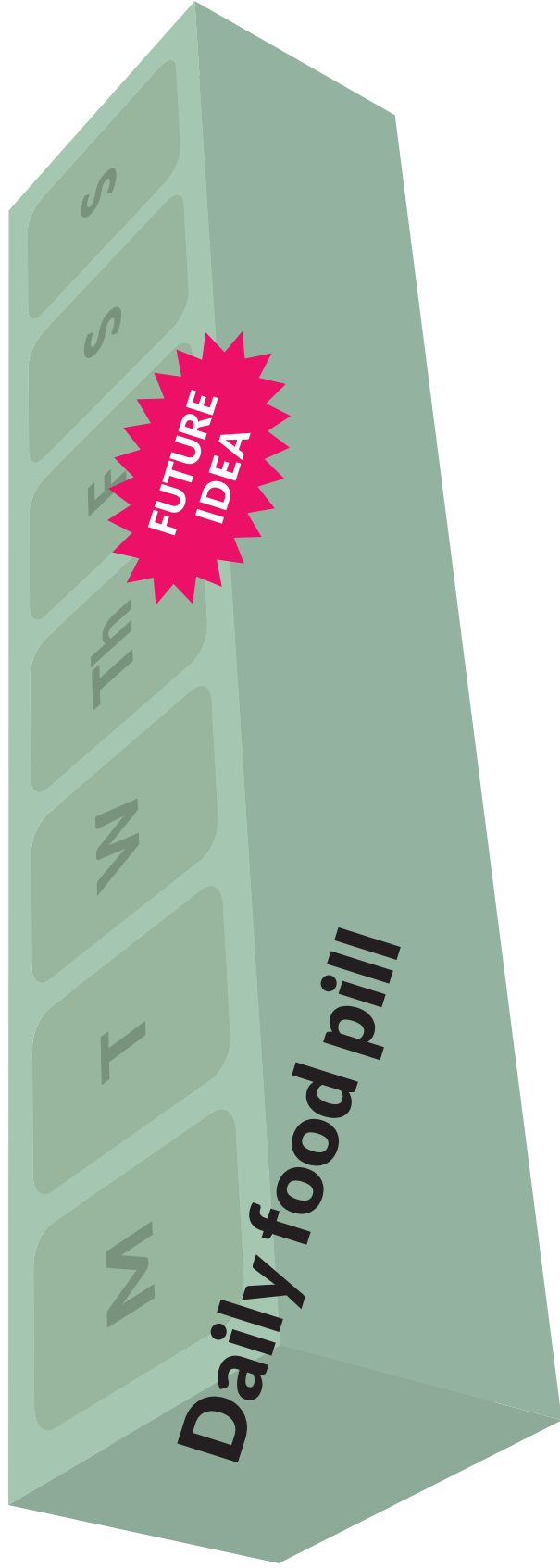
*made by yeast*

**COMING  
SOON!**

# Daily food pill

Imagine a small daily pill that could meet all your requirements for food and nutrition. You wouldn't have to shop for food, cook, or even take time to eat. Instead you'd just pop a pill and be good to go! On the flip side, many social, cultural, and economic systems would have to change if this technology were widely adopted. What would happen to farmers and food production industries? What would you miss about food as we eat it now?

**FUTURE  
IDEA**



**Daily food pill**

**FUTURE  
IDEA**

**Eat it**

**Think about it**

**No way**