Scientists grew this beef patty in a lab. Lab-grown meat could be the food of the future.
Birch Aquarium, in San Diego, California, announced two new members of its aquatic family on February 13. It has hatched a pair of weedy sea dragons. The aquarium is part of the Scripps Institution of Oceanography.

Though less than one inch long when born, this rare fish species can grow to 18 inches. It gets its name from its seaweed-like appearance. Weedy sea dragons are native to southern Australia. But due to climate change and pollution, some have been moved to aquariums to protect them from danger.

Jennifer Nero Moffatt is a senior director at Birch. “This is a momentous event,” she says. “We have spent over 25 years working with these animals and love that we have made the next steps to conserve this delicate species.”

**ANIMALS**

**TWO RARE SEA DRAGONS**

By Ellen Nam

This weedy sea dragon hatched in February.
tweeted VIRGINIA RAGGI, mayor of Rome, Italy, on February 17. She was praising the recent discovery of an underground shrine dedicated to Romulus. In Roman mythology, Romulus and his twin brother, Remus, are said to have been the ancient city's founders.

is the number of SATELLITES launched into orbit from Kazakhstan on February 7. The satellites belong to OneWeb, a London-based communications company. They’ll bring high-speed Internet to areas where there is low or no connectivity.

By 2028, the number of people in the U.S. employed in STEM (science, technology, engineering, and math) jobs is expected to top 10 million. Some of these jobs might be new to you. Here, check out four unique STEM occupations.

FLAVOR CHEMISTS

Flavor chemists use natural and artificial ingredients to create or copy flavors. Creativity and a strong knowledge of chemistry come in handy when making flavors for food, drinks, vitamins, and other items.

CRYPTANALYSTS

Cryptanalysts decode secret messages. They also write codes to protect information from computer hackers. Cryptanalysts often work for the government, military, or police.

STORM CHASERS

Storm chasers track extreme weather events, such as hurricanes and tornadoes. They go to the location of a storm to gather data, which can be used to inform weather forecasts and warnings.

PYROTECHNICIANS

Pyrotechnicians are engineers who design and test fire displays, smoke effects, and explosives, such as fireworks. They also make sure that fire is safely handled during shows and performances.

DATA DEEP DIVE

ABOUT 9 FEET

is the length of the largest TURTLE SHELL ever found. It was discovered in South America. Scientists announced the find on February 12. The turtle, called Stupendemys geographicus, lived about 8 million years ago.

34

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Some say cellular meat is good for the environment and could feed a growing population.

In March 2017, about 25 people were invited to a kitchen in San Francisco, California, for a tasting event. On the menu? Fried chicken. “This is some of the best fried chicken I’ve had,” one guest said.

The compliment was extra special considering the source of the meat. It had been grown in a lab by scientists from Memphis Meats. The company makes meat by safely extracting cells from animals such as chickens, ducks, and cows. Then it feeds the cells nutrients. Those cells grow and multiply, forming muscle, which is meat.

Memphis Meats is one of several companies in the United States and around the world making cellular, or lab-grown, meat. Many people think it’s better for the planet than raising animals for food. Others aren’t so sure.

WHY CELLULAR MEAT?
The world’s population is expected to grow to nearly 10 billion by 2050, according to the United Nations Food and Agriculture Organization (FAO). That’s almost 2 billion more people than there are today. Eric Schulze...
is a vice president at Memphis Meats. He thinks feeding so many people will be tough. FAO says people could eat 73% more meat in 2050. “With current meat production methods, there aren’t enough resources” such as land and water to meet that need, Schulze told TIME for Kids.

Traditional meat production also requires lots of cows. And cows release methane. This gas traps heat in the atmosphere, which contributes to climate change.

Raising cows and other livestock takes up space, too. Currently, 77% of the world’s farmland is used to grow crops to feed livestock or for the animals to graze on. Using more land for livestock will lead to deforestation.

But cellular-meat production requires fewer cows and less land. Schulze says the cells taken during one extraction can make more meat than “any single animal could ever produce.” Just how much land is needed? “You only need the land required for the facility” where the meat is made, Elliot Swartz told TFK. He’s a scientist at the Good Food Institute, a group that promotes cellular meat and plant-based “meat” (see “Plant Power”).

CHALLENGES AHEAD

Not everyone is convinced that cellular meat will help the environment. Alison Van Eenennaam researches animal science at the University of California, Davis. She points out that fossil fuels, such as coal, are used to power cellular-meat production facilities. Burning these fuels releases another heat-trapping gas: carbon dioxide. “If we’re burning coal so that we can grow cellular meat,” she asks, “are we going backward?”

Cellular meat is not yet sold in supermarkets. Before that can happen, it will need to be affordable. The first lab-grown burger, produced in 2013 by Mosa Meat, cost more than $300,000 to make. Costs are dropping. But they can’t yet compete with regular ground beef, which is about $4 a pound.

The U.S. government will also need to pass regulations to make sure cellular meat is safely produced and properly labeled. Officials announced last year that they’re taking steps to do so, but it’s not clear how long the process will take.

—By Rebecca Mordechai

**PLANT POWER**

Some people choose to not eat meat, or to eat less of it. For them, plant-based “meat” is a tasty substitute. To make it, scientists study why meat looks and tastes the way it does. Then they use plants to copy these unique qualities.

Companies like Impossible Foods and Beyond Meat sell their plant-based products in grocery stores. You can also find plant-based options everywhere from fancy restaurants to fast-food chains such as Burger King, Carl’s Jr., and Dunkin’.
As cyberattacks grow common, the U.S. is training a new generation of security experts.

A United States Coast Guard facility was attacked in 2019. Its monitoring systems, cameras, and doors all stopped working. The facility shut down for 30 hours. The source of the attack? An employee had opened an email and clicked the link inside. The link contained malware, a type of software designed to damage computer networks.

Cyberattacks are becoming more common. There are many different types. For instance, attackers can use ransomware to block a user’s access to his or her data. The data is returned if the victim pays a fee.

A U.S. government agency works to protect the country’s computer networks from these attacks. It’s called the National Security Agency, or NSA. “The financial sector, manufacturing sector, banking, health care, energy, transportation—they all rely on having sound cybersecurity,” Diane M. Janosek, of the NSA, told TIME for Kids.

But the NSA has a problem: There aren’t enough people trained to do cybersecurity. According to a 2017 report from Cybersecurity Ventures, there will be 3.5 million unfilled cybersecurity jobs by 2021. To address the shortage, the NSA and the National Science Foundation sponsor cybersecurity camps for elementary, middle, and high school students through a program called GenCyber.

NEXT GENERATION
The first GenCyber camps opened in 2014. Today, there are some 150 of them around the country. All are free for students to attend.

Ibrahim Baggili runs a camp at the University of New Haven, in Connecticut. There, students learn the basics of programming using Python, the coding language favored by many hackers. They also learn about cyber forensics and defense for computer networks.

In one activity, students investigate a crime scene—a computer where malicious, or intentionally harmful, code was used. Physical clues lead them to a phone number. When they call the number, they’re given a Twitter account. Finally, they must decrypt a message posted to the account. To decrypt a coded message means to make it readable.

“Cybersecurity is not a stagnant thing,” Baggili says. “Every day, you’re going to be facing a different challenge. Someone is going to attack you, and you’ll have to defend yourself.”

—By Shay Maunz
**A LOOK INSIDE** Do you know what happens when you watch a video on YouTube? The site collects data about its users, such as what kinds of videos they like and which other websites they visit. It uses this data to target viewers with ads.

**YOUTUBE TROUBLE**

**YouTube has been collecting kids’ data, raising privacy concerns.**

Piper Leypoldt, 11, of Durham, North Carolina, likes to watch cooking videos on YouTube. Recently, she learned that the site collects users’ data, such as search history and location. She’s not concerned. “Other websites I use at home and school also collect my information,” she told *TIME for Kids*.

But advocates for kids’ online privacy are concerned. In September, YouTube agreed to pay a $170 million penalty. The Federal Trade Commission (FTC) said the platform collected kids’ information and used it to target them with ads. The FTC said YouTube did this without parents’ consent, which is illegal.

Kristen Walker is a professor at California State University. She studies how kids share information online. Walker says people can’t see data being gathered, so they don’t think about it. “The Internet is so convenient, it’s easy not to feel a need to be careful,” says Walker.

Your data could be out there forever, Walker warns. You never know who will access it. “The harm is a long-term consequence,” she says. “We can’t see the danger until it’s too late.”

**THE DATA TRAIL**

YouTube started in 2005 as a place for people to share videos. Google bought it in 2006. YouTube is structured to keep people on the site. Artificial intelligence learns what videos you like and recommends similar content. The more you watch, the more ads you see. Selling ad space brings in big bucks for YouTube.

The site uses bits of data that are stored on your device. They help apps and websites remember your device so you don’t have to sign in each time. But they can also be used to track your device across the Internet, gathering data about the kinds of sites you visit.

As part of an agreement with the FTC, YouTube says it will limit the data it collects on videos for kids under 13. It will also require content creators to identify videos made for children. This is so YouTube can make sure it’s following the law.

Advocacy groups say it’s not enough. They say YouTube needs to decide if a video is for kids. Otherwise, “it’s like having a school playground with no one responsible for watching the kids and making sure the equipment is safe,” Susan Grant said in a statement. She works for the Consumer Federation of America.

For now, kids like Piper will need to decide if watching videos on YouTube is worth the potential risks.

—By Brian S. McGrath

With reporting by TFK Kid Reporter Nora Wilson-Hartgrove

**Power Words**

*advocate* noun: someone who argues for or supports a cause

*consent* noun: permission
Kids’ creations come to life in a new computer game called SuperMe. The game was designed by students in Chicago Public Schools. To make it, they had to learn how to code. They also drew their own superheroes. Then they used coding to animate the characters. Ian Fethiere, 11, was one of the kid coders. He’s having fun with his new skills. “I like making games where you can jump over objects,” he told *TIME for Kids*.

Chance the Rapper used SuperMe as the video for “I Love You So Much,” his song with DJ Khaled. He helped fund the coding project with Google. “Exploring the intersection of computer science and arts was a fun way to work with Chance,” Justin Steele told *TIME for Kids*. He’s the director of Google.org.

“Chance called it ‘the cheat code.’ If you can learn computer science, you’ve got the ‘cheat code’ for anything you want to do—if you want to make music, if you want to make art, if you want to make technology,” he says.

—By Constance Gibbs

**MAKING BREAKTHROUGHS**

Throughout United States history, black women have faced discrimination because of both their race and their gender. *Changing the Equation* profiles more than 50 black women who overcame obstacles to become pioneers in the world of STEM. STEM stands for science, technology, engineering, and math.

“STEM is the future,” author TONYA BOLDEN told *TFK*. She wrote the book to teach readers about the huge variety of STEM-related careers they might pursue. It features doctors, aviators, inventors, mathematicians, and others.

Bolden also documents the many hardships that these women faced throughout their careers. *Changing the Equation* is “a celebration of black women in STEM,” she says.

—By Karena Phan