Science

TEXTING WITH A SCIENTIST

ANIMALS ON ICE

BY SUSAN COSIER

SCIENTISTS at the Frozen Zoo in San Diego have been collecting animals for the last 48 years. Collecting their cells, that is. The zoo holds frozen samples from more than 1,000 species and counting. If a species is in danger of extinction, the scientists can try to use those cells to produce new animals and help increase the population. The Frozen Zoo's collection is so impressive that the world's largest conservation organization just designated it a "center for species survival." We texted with its curator, Marlys Houck, about saving cells to save species. An edited version of our conversation follows.

So, what's the Frozen Zoo, using only emojis?

Susan

🧊🧫🔬🐘🦍🦇🦎🐍🐢🦅🦆🦜🐟🌎

Marlys

Can you interpret that for me?

The Frozen Zoo is a collection of frozen cells from all types of animals. We have over 1,280 species from all over the world!

If you look at all of the emojis on your phone for mammals, we have every single one of them except the 🦌.

Cool! How do you get the animal cells?

By taking a piece of skin about the size of the eraser on a ✏️. We usually take it shortly after an animal dies or if veterinarians are doing surgery.

Then what do you do with them?

We freeze them in extremely cold liquid nitrogen 🥶. They go into something like hibernation 💤 so they don't grow or die. We can keep them frozen forever.

The cells are stored in thousands of tiny 🧪 in large metal cryotanks. The liquid nitrogen is so cold (−320° F) that we have to wear 🧤 and 🥽 to protect our hands and 👀.

How do you use those samples to help wildlife?

Living cells contain DNA 🧬 which is the entire blueprint for an individual animal. Sometimes scientists 👩‍🔬 use the cells just to learn 🤔 more about a particular species. The skin cells can also be used to produce a new individual or clone one that existed.

Have scientists used any of the samples to help an endangered animal yet?

Yes! Przewalski's horses — wild horses that live in Mongolia. The population was down 📉 to just 14. In 2020, a lab we work with used cells frozen in 1980 to produce a clone 🐴🐴. Hopefully the cloned animal will have offspring.

What could the Frozen Zoo do in the future?

I hope that the living materials we've saved over the past 48 ⏳ years can help bring back dozens of species from the brink of extinction.

Thank you!

HELP! MY TEACHER THINKS I CHEATED

CHATBOTS CAN DO YOUR HOMEWORK. SOME SCHOOLS ARE FREAKING OUT ABOUT IT.

BY SIMON SPICHAK • ILLUSTRATION BY SIMON BAILLY

JAMES, 14, WORKED hard on his English essay, but his teacher gave him a zero. She thought it was … too good. She ran it through a computer program to check for cheating. It told her that the essay didn't sound "human" enough and that maybe a chatbot had written it. "I wrote such a good essay that my teacher and an A.I. detector thought I used A.I. to write the essay," James, who lives in New York, says. "The accusations actually made me feel proud of myself."

Chatbots like ChatGPT or Bard are online programs that use artificial intelligence, or A.I., to answer questions. To use one, a person just needs to type some instructions, like: "Write a fifth-grade essay about the theme of 'Charlotte's Web.'" In minutes, the program spits out an essay, made to sound like it was written by a fifth grader.

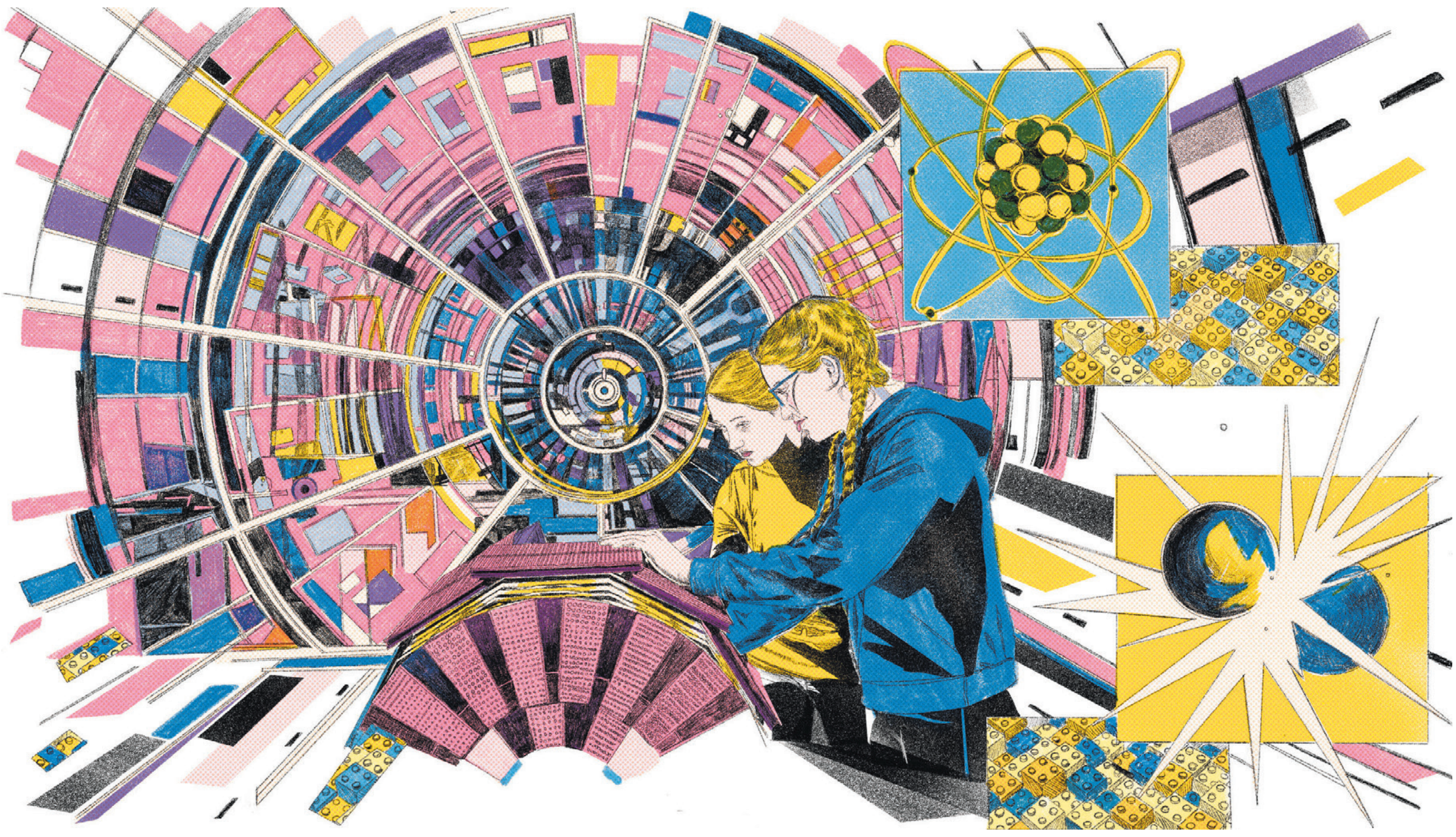
So it's no wonder that many teachers worry that students will use chatbots to cheat on homework. Why would that be a bad idea? For one thing, A.I. still isn't good at a lot of things, says Emily Bender, a professor at the University of Washington. For instance, ChatGPT makes up facts, so it could make major mistakes. And many people, including James, think students who use A.I. to cheat would miss out on learning.

Even the A.I. programs used to detect A.I. aren't good at their jobs, Bender says. That can lead to students' being wrongly accused of cheating, as James was. Kids who don't speak English as their first language are especially likely to be mistakenly flagged by A.I. checkers, a study found. "Teachers should ask the students if they had used A.I., because it's probably easier to tell off the kid's face," James says.

He told his teacher that he hadn't used A.I. She believed him and regraded his essay. He got a 99. ◆

A NEW MUSEUM WHERE PARTICLES CRASH AND MINDS ARE BLOWN

BY DAISY YUHAS • ILLUSTRATION BY NICOLE RIFKIN



EVERYTHING IN THE WORLD is made of particles that are invisible to the human eye. Physicists at CERN, a laboratory in Switzerland, study these particles … by smashing them together.

CERN is home to the world's largest particle accelerator. Made up of more than 16 miles of underground tubes and magnets, it shoots particles at super speeds. When the particles collide, they break apart into even smaller bits. "Our aim is really to know what the whole universe is made of, at the tiniest possible level," says Tamara Vázquez Schröder, a CERN physicist.

This fall, a new museum opened at the high-tech lab. Now kids 5 and up can learn about how literally everything came to be. Activities include building Lego robots and mastering magnets in a model accelerator.

We talked to some of the first visitors. Here's what they said:

"What is cooler than the actual entirety of the universe? I kind of knew that the Big Bang was a giant explosion that created the universe, but I learned at the museum that it was actually a large amount of energy placed at one point that eventually exploded. It's funny how studying tiny things like particles can help us understand big things like the universe."

ALESSANDRO ELMER, 13
Amsterdam

"The science is mysterious but interesting. It's not something that you're used to thinking about."

IVANNA LAURENT-PEREZ, 13
Valserhône, France

"I used to think the universe was just black. Now I know how much fantastic stuff there is in space."

ANNA KOPP, 9
Geneva

"My brother and I volunteered for the opening of the museum. At the beginning, I was like: 'Oh, I'm never going to become a scientist. Science is too complicated for me.' But when I got to the exhibition, I started understanding so many other things. I think the probability of me being a scientist is high."

TEOFIL BRASSEUR, 12
Prévessin-Moëns, France

CERN source photo: CERN