

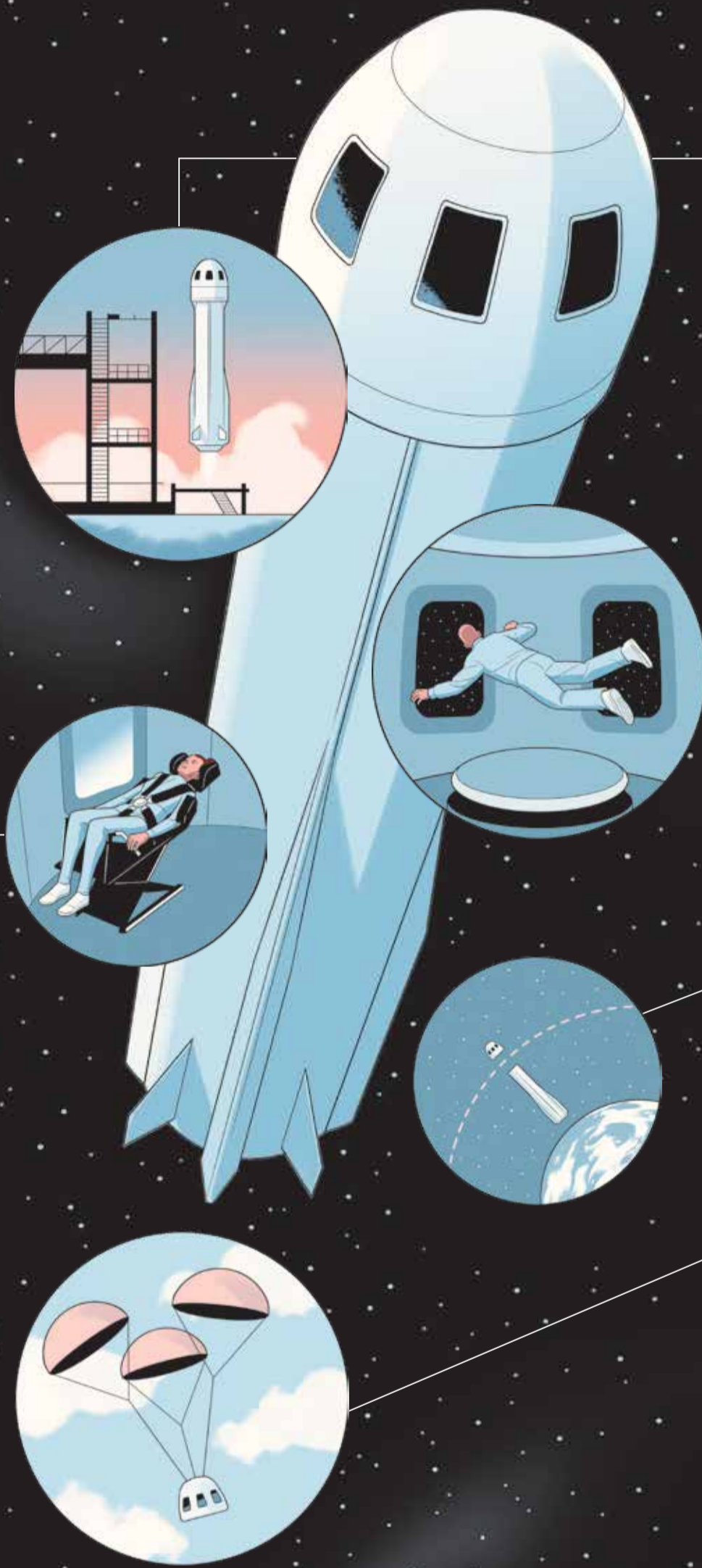
JUST A QUICK LITTLE TRIP TO OUTER SPACE

BY CLAIRE MALDARELLI • ILLUSTRATION BY ANUJ SHRESTHA

FORGET A TRIP to the roller coasters at Six Flags. This summer, for a handful of extremely fortunate people, the most nail-biting excursion will be blasting off to outer space. On July 20, the space company Blue Origin plans to send a group of four nonprofessional astronauts on a short journey beyond Earth's atmosphere on its rocket New Shepard. This marks the first instance of U.S. space tourism — in which humans travel to space for fun rather than to conduct research missions. But it most likely won't be the last: Companies like Blue Origin, which is owned by the Amazon founder Jeff Bezos, and SpaceX are counting on space tourism to become a booming industry. And some people are willing to pay big bucks for it. Earlier this month, Blue Origin auctioned off a seat on the trip, and the anonymous winner paid a cool \$28 million to take the 11-minute jaunt. (The money will go to the company's youth foundation, Club for the Future.) Worth it? Read about how the experience will go for the passengers — including Bezos and his brother — and then decide for yourself.

GETTING READY The passengers will spend two days training at Blue Origin's launch site, in West Texas, before the flight. Activities to master include learning how to enter and exit the capsule and how to move in a weightless environment. The New Shepard rocket itself has also gone through a lot of preparation: It has made 15 test flights. For several of them, there was a test dummy called Mannequin Skywalker onboard to mimic how the human body would react during the trip and to make sure it was safe.

ALL ABOARD On the day of the launch, passengers will climb seven flights of stairs in the launch tower and board New Shepard. (No spacesuits or special gear are required, because the capsule is pressurized and filled with oxygen.) Inside the capsule, which is about the size of a 12-foot moving truck, are six seats, each with a window. Where does the pilot sit? There is no pilot! Instead, New Shepard's flight path is preprogrammed into the computer systems



before launch. But a team of experts sits in Mission Control on Earth, standing by to help if needed.

BLAST OFF! After the passengers buckle their five-point harnesses, it's go time. As the rocket lifts off, its booster (which holds the engine) will provide the power to rapidly accelerate until everything is traveling at three times the speed of sound. That's 2,302 miles per hour, about four times as fast as a commercial airplane. To the passengers, the pressure of gravity pushing against them at that speed will make a high-speed roller coaster feel like a walk in the park. Once the rocket has climbed 47 miles into the sky, the booster will detach from the capsule and continue its preprogrammed trajectory back to Earth.

FREE-FLOAT TIME When people are this high up in the atmosphere, they don't feel Earth's gravitational pull. At this point, about three minutes into the journey, the passengers can remove their harnesses and bob around the capsule.

CROSSING THE BORDER Less than a minute after the booster detaches, the capsule will pass the Kármán line, the internationally recognized border between Earth and space, 62 miles from sea level. It will spend a couple of minutes in outer space, rotating so that everyone onboard — who now can officially call themselves astronauts — can take in the view of the blackness of space and the curvature of Earth below.

BACK TO EARTH Once the capsule re-enters the atmosphere, the passengers will refasten their harnesses as it continues its preprogrammed flight back to West Texas. When New Shepard is a few thousand feet above the ground, parachutes will automatically open to help the capsule drift back to Earth at a leisurely pace of 16 miles per hour. Just before landing, the bottom of the capsule will release a powerful cloud of air to slow the rocket even further, bringing it in for a gentle landing. To space and back, and home in time for dinner. ♦

FINALLY! 3 TEENS ON GETTING THE VACCINE

BY SARAH MERVOSH



Julian Boyce, 14, didn't waste any time before getting his first shot of the Pfizer-BioNTech Covid vaccine.

FOR MILLIONS of young people who couldn't bear the thought of another summer in quarantine, May 12, 2021, was a momentous day. That's when the Centers for Disease Control and Prevention recommended the Pfizer-BioNTech vaccine for use in people as young as 12. With that, about 17 million young people suddenly became eligible to get the shot — and within less than a week, more than 600,000 of them had. But some couldn't wait even that long. Here are three who showed up at their local sites within the first day the vaccines were available to them.

JULIAN BOYCE, 14 NEW YORK CITY

Julian's family has known some 20 people who died of Covid-19 — neighbors, members of their church, parents from Little League. When vaccinations opened up to his age group, Julian was one of the first kids in the door at Harlem Hospital Center. He asked a nurse to give the shot in his left arm, so if he had any soreness it wouldn't affect his writing. Then he turned to his phone to text his friends: "I just got my vaccine."

CALYSTA MAGNE-GORDON, 13 NASHVILLE

Calysta, who spent eighth grade in an online classroom and disconnected from friends, couldn't get her shot fast enough. "I was like, 'Do it,'" she said, snapping her fingers. "I don't care how early I have to wake up in the morning — I need to get that vaccine." Among her first orders of business once she's fully vaccinated? Ordering waffles at her favorite restaurant before she heads off to an arts-and-music sleepaway camp in Michigan this summer.

ROMINA NAVARRETE, 15 SAN ANTONIO

Romina was one of the many teenagers who showed up at the vaccination site at San Antonio's Wonderland of the Americas shopping center the day after the new guidelines were announced. For her, finally being vaccinated made up for the fact that she had to skip having a lavish quinceañera, a traditional coming-of-age party for Latinas, when she turned 15 in December. "Instead of celebrating," she said, smiling behind her mask, "I'm staying alive." ♦

Reporting contributed by Joseph Goldstein in New York, Jamie McGee in Nashville and Edgar Sandoval in San Antonio.

ANIMALS' POOP SECRETS



BY CHRISTINA SZALINSKI • ILLUSTRATION BY SERGE SEIDLITZ

FROM THE BIGGEST blue whale to the teeniest dust mite, there's one thing almost every member of the animal kingdom has in common: pooping. And yet there's a ton of variety when it comes to how they do it, says David Hu, a Georgia Institute of Technology engineer who recently studied wombat scat.

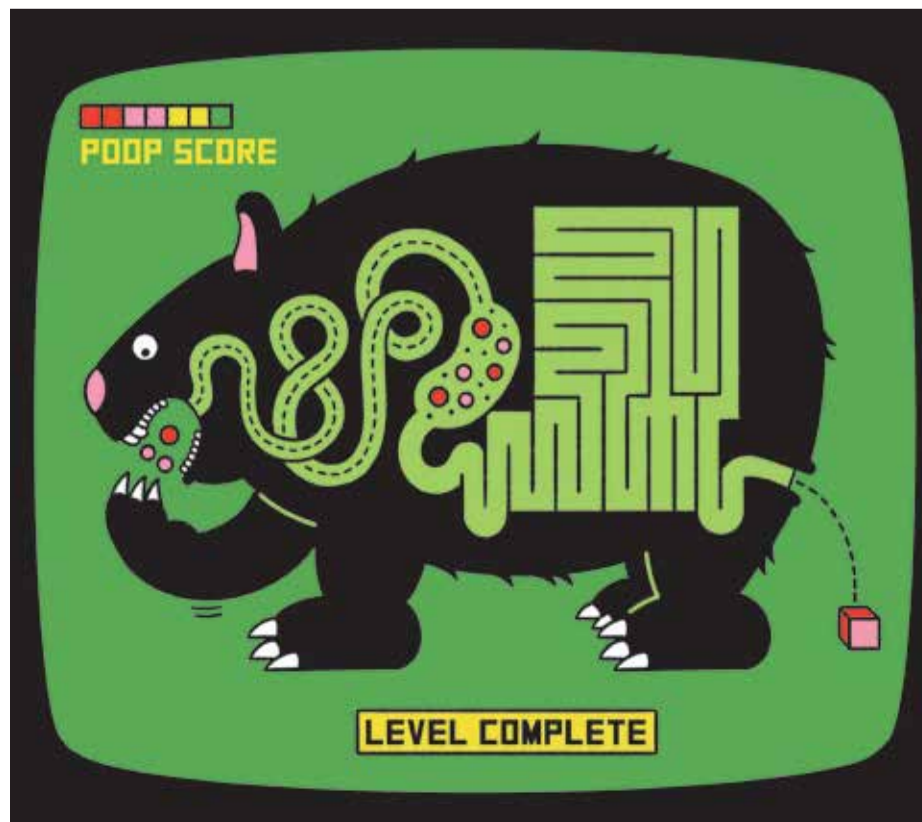
WOMBATS MAKE MYSTERIOUS CUBES

Bare-nosed wombats — marsupials that look like a cross between a bear and a gopher — produce up to 100 pieces of poop a day. And get this: Those poops are shaped like cubes. To find out why, Hu and his colleagues made a computer model of the muscles in wombats' intestines. In most animals, these muscles squeeze equally from all sides, creating round poop. But in wombats, they

be squeezed unequally, shaping it into cubes. The scientists think this shape helps the poop stay put on rocks and logs — and may serve as a communication to other wombats.

RABBITS EAT THEIR MEALS TWICE

Rabbits and hares make two kinds of feces: One's typical dung, mostly made up of the indigestible remains of a meal. The other is a meal unto itself — clusters called caecal pellets, which the rabbits poop out and then ... eat. In fact, they need to eat these nutritious pellets to survive. That's because a part of their digestive system that breaks down food and produces essential nutrients, a pouch called the cecum, comes after the place where most nutrients are actually absorbed. So the only way to get them is to send the poop through the system all over again.



PENGUIN BUTTS ARE LIKE FIRE HOSES

When chinstrap and Adélie penguins need to go, they're often faced with a dilemma. They like to keep their nests clean, so they don't poop there. But they also can't leave their nests when they have an egg or chick to keep warm. The solution: The penguins aim their butts away from the nest and let it rip. Physicists have calculated that a penguin creates four times more pressure with its rectal muscles while pooping than a human does. That's about the pressure difference between a sprinkler and a fire hose, and it means some penguins can project their waste more than four feet from the nest.

VULTURES PUT THEIR POOP TO WORK

If you watch vultures poop, you might think that they're total slob — they just let

loose all over their legs. But it's actually useful! As the liquid in the poop evaporates, it cools the birds off. The mess may also keep them germ-free: Vultures feed on dead, rotting animals, and the gunk that ends up on their legs can contain nasty bacteria. Fortunately, some of their strong digestive acids — which prevent them from getting sick on rancid meat — comes out in their poop. That may help kill the bacteria on their legs too.

BEELE LARVAE MAKE FECAL SHIELDS

One last quick fact: Tortoise-beetle babies (called larvae) use dung as a self-defense tool! A larva will squirt waste onto a structure called an anal fork that holds the hardened poop above them, protecting them from threats. Thanks, poop. ♦