

Space

Blue Origin's debut flight

Bezos going to space on rocket's 1st mission

CAPE CANAVERAL, Fla., June 8, (AP) — Outdoing his fellow billionaires in daredevilry, **Jeff Bezos** will blast into space next month when his Blue Origin company makes its first flight with a crew.

The 57-year-old Amazon founder and richest person in the world by Forbes' estimate will become the first person to ride his own rocket to space.

Bezos announced his intentions Monday and, in an even bolder show of confidence, said he will share the adventure with his younger brother and best friend, Mark, an investor and volunteer firefighter. He said that will make it more meaningful.

Blue Origin's debut flight with people aboard — after 15 successful test flights of its reusable New Shepard rockets — will take place on July 20, a date selected because it is the 52nd anniversary of the first moon landing by Apollo 11's Neil Armstrong and Buzz Aldrin.

The Bezos brothers will launch from remote West Texas alongside the winner of an online charity auction. There's no word yet on who else might fill the six-person capsule during the 10-minute flight that will take its passengers to an altitude of about 65 miles (105 kilometers), just beyond the edge of space, and then return to Earth without going into orbit.

Bezos said he has dreamed of traveling to space since he was 5.

"To see the Earth from space, it changes you. It changes your relationship with this planet, with humanity. It's one Earth," Bezos said in an Instagram post. "I want to go on this flight because it's a thing I've wanted to do all my life. It's an adventure. It's a big deal for me."

Added his brother: "I wasn't even expecting him to say that he was going to be on the first flight, and then when he asked me to go along, I was just awestruck."

Bezos will step down as Amazon's CEO 15 days before lift-off. He announced months ago that he wants to spend more time on his rocket company as well as his newspaper, The Washington Post.

Private

His stake in Amazon stands at \$164 billion, which will make him by far the wealthiest person to fly to space.

Until now, thrill-seeking billionaires have had to buy capsule seats from the Russian space program or, more recently, Elon Musk's SpaceX, which plans its first private flight in September. These orbital trips, generally lasting several days, with visits to the International Space Station, have cost tens of millions of dollars per person.

The flight by Blue Origin's New Shepard capsule, named for Alan Shepard, the first American in space, will last five minutes less than Shepard's history-marking suborbital ride aboard a Mercury capsule in 1961.

But Blue Origin's capsule is 10 times roomier with a huge window at every seat — the biggest windows ever built for a spacecraft, in fact.

The company, based in Kent, Washington, is working to develop an orbital rocket named after John Glenn, the first American to circle the Earth.

The Bezos flight will officially kick off the company's space tourism business. The company has yet to start selling seats to the public or even to announce a ticket price for the short trips, which provide about three minutes of weightlessness.

Blue Origin's launch and landing site is 120 miles southeast of El Paso, close to the Mexican border. After the capsule separates, the rocket returns to Earth and lands upright, to be used again. The capsule, also reusable, descends under parachutes.

Virgin Galactic's Richard Branson — a "tie-loathing," mountain-climbing, hot-air-ballooning daredevil — also plans to ride into space aboard his own airplane-launched rocket-ship later this year after one more test flight over New Mexico. Virgin Galactic completed its third test flight into space with a crew two weeks ago; the company doesn't want him climbing aboard until the craft is thoroughly proven.

The 70-year-old Branson on Monday offered congratulations to Bezos, a tame, bookish Wall Streeter by comparison. Branson tweeted that their two companies "are opening up access to space - how extraordinary!"

Like Blue Origin, Branson's company will send paying customers to the lower reaches of space on up-and-down flights, not Earth-orbiting rides.

Musk's SpaceX already has transported 10 astronauts to the space station for NASA and sold several seats on private flights. Musk himself has yet to commit to going into space, though he has repeatedly said he wants to die on Mars, just not on impact.

Until recently, Blue Origin had been criticized by some for proceeding too slowly, especially when compared with SpaceX. Bezos adopted as the company's motto "Gradatim ferociter," Latin for "Step by step, ferociously," and had it emblazoned on the so-called lucky cowboy boots he wears to his company's space launches.

"Blue Origin, admirably, has gone about it carefully and has built a reliable and less ambitious vehicle and is likely to succeed," the director of Vanderbilt University's aerospace design lab, Amrutur Anilkumar, said in an email Monday. "It is noteworthy that Bezos feels comfortable taking his brother for a ride; that is probably the best exclamation for safety and reliability."

While Blue Origin's and SpaceX's capsules are fully automated, Virgin Galactic has two pilots in the cockpit for every spaceflight. A 2014 accident left one pilot dead and the other seriously injured.

As for the seat that is being auctioned off, Blue Origin opened online bidding on May 5, the 60th anniversary of Shepard's flight. It's up to \$2.8 million.

The auction will conclude Saturday, with the winning amount donated to Club for the Future, Blue Origin's education foundation, which encourages youngsters to pursue careers in science. Nearly 6,000 people from 143 countries have taken part in the auction.

In an Instagram video posted by Bezos, Mark Bezos' reaction when his brother invited him on the flight was: "Are you serious? ... Seriously? My God!"

"What a remarkable opportunity not only to have this adventure, but to be able to do it with my best friend," the younger brother said.

Also:

CAPE CANAVERAL, Fla: General Motors is teaming up with Lockheed Martin to produce the ultimate off-road, self-driving, electric vehicles — for the moon.

The project announced recently is still in the early stages and has yet to score any NASA money. But the goal is to design light yet rugged vehicles that will travel farther and faster than the lunar rovers that carried NASA's Apollo astronauts in the early 1970s, the companies said.

"Mobility is really going to open up the moon for us," said Kirk Shireman, a former NASA manager who is now Lockheed Martin's vice president for lunar exploration.

The rovers used by the Apollo 15, 16 and 17 moonwalkers ventured no more than 4 1/2 miles (7.6 kilometers) from their landers. GM also helped design those vehicles.

NASA last year put out a call for industry ideas on lunar rovers. The space agency aims to return astronauts to the moon by 2024, a deadline set by the previous White House.

Their initial rovers will be designed to carry two astronauts at a time, according to company officials. A brief company video showed a large, open rover speeding over lunar slopes, with more headlights in the distance.

This is "just a glimpse of how we see the opportunity playing out," said **Jeff Ryder**, a vice president for GM Defense.



In this image from video made available by Blue Origin, the New Shepard capsule uses parachutes to land during a test in West Texas on April 14, 2021. Jeff Bezos will ride his own rocket into space next month, joining the first crew to fly Blue Origin. (AP)



This image provided by Biogen on June 7, shows a vial and packaging for the drug Aduhelm. On June 7, the Food and Drug Administration approved Aduhelm, the first new medication for Alzheimer's disease in nearly 20 years, disregarding warnings from independent advisers that the much-debated treatment hasn't been shown to help slow the brain-destructuring disease. (AP)



Keeling

Mahowald

Discovery

CO2 levels hit 50% higher: The annual peak of global heat-trapping carbon dioxide in the air has reached another dangerous milestone: 50% higher than when the industrial age began.

And the average rate of increase is faster than ever, scientists reported Monday.

The National Oceanic and Atmospheric Administration said the average carbon dioxide level for May was 419.13 parts per million. That's 1.82 parts per million higher than May 2020 and 50% higher than the stable pre-industrial levels of 280 parts per million, said NOAA climate scientist Pieter Tans.

Carbon dioxide levels peak every May just before plant life in the Northern Hemisphere blossoms, sucking some of that carbon out of the atmosphere and into flowers, leaves, seeds and stems. The reprieve is temporary, though, because emissions of carbon dioxide from burning coal, oil and natural gas for transportation and electricity far exceed what plants can take in, pushing greenhouse gas levels to new records every year.

"Reaching 50% higher carbon dioxide than preindustrial is really setting a new benchmark and not in a good way," said Cornell University climate scientist **Natalie Mahowald**, who wasn't part of the research. "If we want to avoid the worst consequences of climate change, we need to work much harder to cut carbon dioxide emissions and right away."

Climate change does more than increase temperatures. It makes extreme weather — storms, wildfires, floods and droughts — worse and more frequent and causes oceans to rise and get more acidic, studies show. There are also health effects, including heat deaths and increased pollen. In 2015, countries signed the Paris agreement to try to keep climate change to below what's considered dangerous levels.

The one-year jump in carbon dioxide was not a record, mainly because of a La Nina weather pattern, when parts of the Pacific temporarily cool, said Scripps Institution of Oceanography geochemist **Ralph Keeling**. Keeling's father started the monitoring of carbon dioxide on top of the Hawaiian mountain Mauna Loa in 1958, and he has continued the work of charting the now famous Keeling Curve.

Scripps, which calculates the numbers slightly differently based on time and averaging, said the peak in May was 418.9.

Also, pandemic lockdowns slowed transportation, travel and other activity by about 7%, earlier studies show. But that was too small to make a significant difference. Carbon dioxide can stay in the air for 1,000 years or more, so year-to-year changes in emissions don't register much.

The 10-year average rate of increase also set a record, now up to 2.4 parts per million per year. (AP)

China's elephants int'l stars: Already famous at home, China's wandering elephants are now becoming interna-

Health

Alzheimer's first new drug in 20 years

FDA OK's much-debated Alz's drug

WASHINGTON, June 8, (AP) — Government health officials on Monday approved the first new drug for Alzheimer's disease in nearly 20 years, disregarding warnings from independent advisers that the much-debated treatment hasn't been shown to help slow the brain-destructuring disease.

The Food and Drug Administration approved the drug from Biogen based on study results showing it seemed "reasonably likely" to benefit Alzheimer's patients. It's the only therapy that US regulators have said can likely treat the underlying disease, rather than manage symptoms like anxiety and insomnia.

The decision, which could impact millions of Americans and their families, is certain to spark disagreements among physicians, medical researchers and patient groups. It also has far-reaching implications for the standards used to evaluate experimental therapies, including those that show only incremental benefits.

The new drug, which Biogen developed with Japan's Eisai Co., did not reverse mental decline, only slowing it in one study. The medication, aducanumab, will be marketed as Aduhelm and is to be given as an infusion every four weeks.

Dr. Caleb Alexander, an FDA adviser who recommended against the drug's approval, said he was "surprised and disappointed" by the decision.

"The FDA gets the respect that it does because it has regulatory standards that are based on firm evidence. In this case, I think they gave the product a pass," said Alexander, a medical researcher at Johns Hopkins University.

The FDA's top drug regulator acknowledged that "residual uncertainties" surround the drug, but said Aduhelm's ability to reduce harmful clumps of plaque in the brain is expected to help slow dementia.

"The data supports patients and caregivers having the choice to use this drug," Dr. Patrizia Cavazzoni told reporters. She said the FDA carefully weighed the input of people living with the "devastating, debilitating and deadly disease."

Under terms of the so-called accelerated approval, the FDA is requiring Biogen to conduct a follow-up study to confirm benefits for patients. If the study fails to show effectiveness, the FDA could pull the drug from the market, though the agency rarely does so.

Biogen said the drug would cost approximately \$56,000 for a typical year's worth of treatment, and said the price would not be raised for four years. Most patients won't pay anywhere near that thanks to insurance coverage and other discounts. The company said it aims to complete the FDA-mandated follow-up trial by

2030.

Biogen shares jumped 38% in trading Monday on the news, with analysts forecasting billions in future sales. The Cambridge, Massachusetts-based company plans to begin shipping millions of doses within two weeks.

The non-profit Institute for Clinical and Economic Review, which studies drug value, said Biogen's drug would have to halt dementia entirely to justify its \$56,000 per-year price tag.

Some 6 million people in the U.S. and many more worldwide have Alzheimer's, which gradually attacks areas of the brain needed for memory, reasoning, communication and basic daily tasks. In the final stages of the disease, those afflicted lose the ability to swallow. The global burden of the disease, the most common cause of dementia, is only expected to grow as millions more baby boomers progress further into their 60s and 70s.

Aducanumab (pronounced "add-yoo-CAN-yoo-mab") helps clear a protein called beta-amyloid from the brain. Other experimental drugs have done that but they made no difference in patients' ability to think, care for themselves or live independently.

The pharmaceutical industry's drug pipeline has been littered for years with failed Alzheimer's treatments. The FDA's greenlight Monday is likely to revive investments in therapies previously shelved by drugmakers.

Evidence

The new medicine is manufactured from living cells and will be given via infusion at a doctor's office or hospital.

Researchers don't fully understand what causes Alzheimer's but there's broad agreement the brain plaque targeted by aducanumab is just one contributor. Evidence suggests family history, education and chronic conditions like diabetes and heart disease may all play a role.

"This is a sign of hope but not the final answer," said Dr. Richard Hodes, director of the National Institute on Aging, which wasn't involved in the Biogen studies but funds research into how Alzheimer's forms. "Amyloid is important but not the only contributing factor."

Patients taking aducanumab saw their thinking skills decline 22% more slowly than patients taking a placebo.

But that meant a difference of just 0.39 on an 18-point score of cognitive and functional ability. And it's unclear how such metrics translate into practical benefits, like greater independence or ability to recall important details.

The FDA's review of the drug has become a flashpoint in longstanding debates over standards used to evaluate therapies for hard-to-treat conditions. On one side, groups representing

Alzheimer's patients and their families say any new therapy — even one of small benefit — warrants approval. But many experts warn that greenlighting the drug could set a dangerous precedent, opening the door to treatments of questionable benefit.

The approval came despite a scathing assessment in November by the FDA's outside panel of neurological experts. The group voted "no" to a series of questions on whether reanalyzed data from a single study submitted by Biogen showed the drug was effective.

Biogen halted two studies in 2019 after disappointing results suggested aducanumab would not meet its goal of slowing mental and functional decline in Alzheimer's patients.

Several months later, the company reversed course, announcing that a new analysis of one study showed the drug was effective at higher doses and the FDA had advised that it warranted review. Company scientists said the drug's initial failure was due to some patients not receiving high enough doses to slow the disease.

But the changes to dosing and the company's after-the-fact analysis made the results hard to interpret, raising skepticism among many experts, including those on the FDA panel.

The FDA isn't required to follow the advice of its outside panelists and has previously disregarded their input when making similarly high-profile drug decisions.

About 900 US medical facilities are ready to begin prescribing the drug, according to Biogen, with many more expected in coming months. But key practical questions remain: How long do patients benefit? How do physicians determine when to discontinue the drug? Does the drug have any benefit in patients with more advanced dementia?

With FDA approval, aducanumab is almost certain to be covered by most insurers, including Medicare, the government plan for seniors that covers more than 60 million people.

Insurers could try to manage the drug's costs by requiring strict conditions, including brain scans to confirm plaque, before agreeing to cover it.

Additional scans will be needed to monitor potential side effects. The drug carries a warning about temporary brain swelling that can sometimes cause headaches, confusion and dizziness. Other side effects included allergic reactions, diarrhea and disorientation.

Although Biogen studied the drug in people with mild dementia or early-stage Alzheimer's, the FDA label approved the drug for anyone with Alzheimer's, a sweeping population given doctors have broad leeway in diagnosing the condition.

tional stars.

Major global media are chronicling the herd's more than yearlong, 500 kilometer (300 mile) trek from their home in a wildlife reserve in mountainous southwest

Yunnan province to the outskirts of the provincial capital of Kunming.

Twitter and YouTube are full of clips of their various antics, particularly those of two calves, who slipped into an irri-

gation ditch and had to be helped out by older members of the group.

"We should be more like the elephant and be more family oriented, take family vacations and help and care for and protect each other," read one comment on YouTube signed MrDeterministicchaos.

The elephants have been trending for days on China's Weibo microblogging service with photos of the group sleeping attracting 25,000 posts and 200 million views Monday night.

The 15-strong herd has been caught at night trotting down urban streets by security cameras, filmed constantly from the air by more than a dozen drones and followed by those seeking to minimize damage and keep both pachyderms and people out of harm's way.

They've raided farms for food and water, visited a car dealership and even showed up at a retirement home, where they poked their trunks into some of the rooms, prompting one elderly man to hide under his bed.

While no animals or people have been hurt, reports put damage to crops at more than \$1 million.

Sixteen animals were originally in the group, but the government says two returned home and a baby was born during the walk. The herd is now composed of six female and three male adults, three juveniles and three calves, according to official reports. (AP)



A woman receives a shot of the AstraZeneca vaccine during a mass coronavirus vaccination held at a children's library in Jakarta, Indonesia, June 8. The world's fourth-most populous country, with about 275 million people, has reported more coronavirus cases than any other Southeast Asian country. (AP)