

## World News Roundup



In this Nov. 13, 2017 file photo, Brian Madeux starts to receive the first human gene editing therapy for Hunter syndrome, as his girlfriend Marcie Humphrey (left), applauds at the UCSF Benioff Children's Hospital in Oakland, Calif. At right is nurse practitioner Jacqueline Madden. On Feb. 7, 2019, scientists gave an update on the first effort to edit genes, or permanently change the DNA, of about a dozen adults, including Madeux, with metabolic diseases. (AP)

## Space

## 'Historic achievement'

## US-built 'capsule' with dummy aboard docks

CAPE CANAVERAL, Fla., March 4, (AP) — A sleek new American-built capsule with just a test dummy aboard docked smoothly with the International Space Station on Sunday, bringing the US a big step closer to getting back in the business of launching astronauts.

The white, bullet-shaped Dragon capsule, developed by Elon Musk's SpaceX company under contract to NASA, closed in on the orbiting station nearly 260 miles above the Pacific Ocean and, flying autonomously, linked up on its own, without the help of the robotic arm normally used to guide spacecraft into position.

Dragon's arrival marked the first time in eight years that an American-made spacecraft capable of carrying humans has flown to the space station.

If this six-day test flight goes well, a Dragon capsule could take two NASA astronauts to the orbiting outpost this summer.



Bridenstine

"A new generation of space flight starts now with the arrival of @SpaceX's Crew Dragon to the @Space\_Station," NASA Administrator **Jim Bridenstine** tweeted. "Congratulations to all for this historic achievement getting us closer to flying American Astronauts on American rockets."

Ever since NASA retired the space shuttle in 2011, the US has been hitching rides to and from the space station aboard Russian Soyuz spacecraft. In the meantime, NASA is paying two companies — SpaceX and Boeing — to build and operate America's next generation of rocket ships.

## Character

SpaceX's 27-foot-long (8-meter-long) capsule rocketed into orbit early Saturday from NASA's Kennedy Space Center with a mannequin strapped into one of its four seats in a dashing, white-and-black, form-fitting SpaceX spacesuit. The test dummy was nicknamed Ripley after the main character in the "Alien" movies.

Ripley and the capsule are rigged with sensors to measure noise, vibration and stresses and monitor the life-support, propulsion and other critical systems.

As the capsule closed in on the space station, its nose cap was wide open like a dragon's mouth to expose the docking mechanism. In a docking with a crew aboard, the capsule would likewise operate autonomously, though the astronauts might push a button or two and would be able to intervene if necessary.

The three US, Canadian and Russian crew members aboard the space station watched the rendezvous via TV cameras. Within hours, the capsule's hatch swung open and the three astronauts floated inside to remove supplies and take air samples, wearing oxygen masks and hoods until they got the all-clear.

Canadian astronaut David Saint-Jacques pronounced the docking flawless and called it "a beautiful thing to see."

"Welcome to the new era in spaceflight," he said.

Dragon will remain at the space station until Friday, when it will undock for an old-school, "Right Stuff"-style splashdown in the Atlantic, a few hundred miles off Florida.

As part of Sunday's shakedown, the space station astronauts sent commands for Dragon to retreat and then move forward again, before the capsule closed in for good. SpaceX employees at company headquarters in Hawthorne, California, cheered the docking, then burst into applause again when the Dragon's latches were secured.



Researcher Peter Smibert at the NY Genome Center in New York demonstrates a step in single-cell RNA analysis on Sept. 26, 2018. Until recently, trying to study key traits of cells from people and other animals often meant analyzing bulk samples of tissue, producing a muddled-up average of results from many cell types. It was like trying to learn about a banana by studying a strawberry-blueberry-orange-banana smoothie.



Al-Anani



Woldemariam

## Discovery

**Egypt completes restoration:** Egypt on Sunday completed a project to restore the catacombs of Kom el-Shuqafa in western Alexandria, which have been prone to groundwater leaks since they were discovered in the first decade of the 20th century.

The restoration, which began in late 2017, was completed using a \$5.7 million grant from the US Agency for International Development (USAID). The grant also covered maintenance and training for ministry employees.

"The antiquity underwent many restoration projects, the most important of which was in the mid-nineties, which was an ambitious project supervised by the Supreme Council of Antiquities," Antiquities Minister **Khaled al-Anani** said from the site on Sunday.

"But unfortunately, the water returned once again and complaints rolled in from parliamentarians, tour guides and archaeologists, which is what pushed us to act in cooperation with USAID."

The catacombs are unique, mixing ancient Egyptian and Greco-Roman architectural styles. They were carved into the rock on three levels. The ground level was damaged by water from nearby farmland and a canal, as well as sewage water.

The antiquities ministry has previously cooperated with USAID on several groundwater-removal projects in Cairo, Giza, Luxor and Aswan.

## Science

## 'Single-cell revolution is just starting'

## Scientists zero in on individual cells

NEW YORK, March 4, (AP) — Did you hear what happened when Bill Gates walked into a bar? Everybody there immediately became millionaires — on average.

That joke about a very rich man is an old one among statisticians. So why did Peter Smibert use it to explain a revolution in biology?

Because it shows averages can be misleading. And Smibert, of the New York Genome Center, says that includes when scientists are trying to understand the basic unit of life, the cell.

Until recently, trying to study key traits of cells from people and other animals often meant analyzing bulk samples of tissue, producing a muddled-up average of results from many cell types. It was like trying to learn about a banana by studying a strawberry-blueberry-orange-banana smoothie.

In recent years, however, scientists have developed techniques that let them directly study the DNA codes, the activity of genes and other traits of individual cells. The approach has become widely adopted, revealing details about the body that couldn't be shown before. And it has opened the door to pursuing an audacious goal: listing every cell type in the human body.

"Single-cell analysis is crucial for a comprehensive understanding of our biology and health," Dr. Francis Collins, the director of the National Institutes of Health, declared recently.

In fact, the journal Science named the techniques that allow single-cell tracking of gene activity over time in developing organisms and organs as its "breakthrough

of the year" for 2018. Its announcement declared, "The single-cell revolution is just starting."

Even complicated animals like us are really just massive communities of cells, each taking on a particular role and working with its neighbors. An average adult human has 37 trillion or so of them, and they're surprisingly varied: the inner lining of the colon, for example, has more than 50 kinds of cells.

It was just five years ago that methods for decoding DNA and its chemical cousin RNA from individual cells became broadly accessible, according to the journal Nature Methods. New techniques are still being developed to pry more and more secrets out of individual cells.

The single-cell approach is leading to a slew of discoveries. In just the past year, for example:

- Scientists closely tracked gene activity within fish and frog embryos, a step toward the longstanding goal of understanding how a single fertilized egg can produce an animal. One study compiled results from more than 92,000 zebrafish embryonic cells.

- Other researchers revealed details of the physical connection between pregnant women and the fetus, giving potential clues for understanding some causes of stillbirth.

- A study found a pattern of gene activity in some melanoma cells that let them resist immunotherapy, the practice of unleashing the body's immune system on cancer. That might lead to finding a way to render those cells vulnerable.

And a pair of other studies may affect

research into cystic fibrosis, the genetic disease that causes lung infections and limits breathing ability. Scientists have long known that the disease stems from a faulty version of protein called CFTR. The studies identified a type of rare cell in the airway that makes large amounts of CFTR, surpassing earlier but only dimly understood indications that such cells existed.

Meanwhile, the ability to produce single-cell results for hundreds of thousands of cells at a time has opened the door to a huge effort to catalog every cell type in the human body. More than 1,000 scientists from 57 countries have joined the Human Cell Atlas Consortium, which estimates it will eventually profile at least 10 billion cells found in both healthy and sick people.

Why do this? It's a natural follow to the big project that catalogued all the human genes, says co-organizer Aviv Regev, a biology professor at the Massachusetts Institute of Technology and researcher at the Broad Institute of MIT and Harvard. (Her salary is paid by the Howard Hughes Medical Institute, which also supports The Associated Press Health & Science Department.)

The gene map led to identifying thousands of genetic variants that raise or lower the risk of many diseases. But to turn that into therapies, scientists have to know in which cells those variants act, she said. And to run down those cells in the human body, "we have to map all of them."

Some cells are rarer than others, but these can be just as critical for a functioning body as their more plentiful neighbors, she said.

Al-Anani said a similar project will be opened on March 25 at Kom Ombo in Aswan governorate.

Egypt has been working to revive its

tourism industry — a key source of foreign currency — which was badly hit after the 2011 popular uprising that unseated Hosni Mubarak and was further hampered by a

spate of militant attacks that sometimes targeted visitors. (RTRS)

**Museum to return hair:** Two locks of hair belonging to widely revered Ethiopian Emperor Tewodros will be repatriated after a request from Addis Ababa, the National Army Museum in Britain announced Monday, as more African countries seek to reclaim heritage they say was taken decades, even centuries, ago.

An outcry erupted last year in Ethiopia over an exhibit by the Victoria and Albert Museum on the 1868 British expedition to what was then called Abyssinia. During that campaign, in which 13,000 troops were deployed to free several British hostages, the emperor killed himself and his fortress was captured and looted.

"Even at the time, this episode was regarded as a shameful one," the Victoria and Albert Museum said in its notes on the exhibit.

Ethiopians were appalled, with the government saying it would use "whatever legal and diplomatic instruments" to secure the return of related items including an intricate golden crown. That locks of the emperor's hair were being held by another British museum was seen as particularly sensitive. "Displaying human parts in websites and museums is inhumane," Ethiopia's minister for culture and tourism, **Hirut Woldemariam**, told The Associated Press last year. The National Army Museum has said the hair was donated in 1959 by relatives of an artist who painted the emperor on his deathbed. (AP)



In this March 3 handout photo provided by the Bureau of Customs Public Information Office, duct-taped turtles are mixed inside luggage as they are presented to reporters in Manila, Philippines. Philippine authorities said that they found more than 1,500 live exotic turtles stuffed inside luggage at Manila's airport. The various types of turtles were found Sunday inside four pieces of left-behind luggage of a Filipino passenger arriving at Ninoy Aquino International Airport on a Philippine Airlines flight from Hong Kong, Customs officials said in a statement. (AP)