

World News Roundup



In this file photo, Hyundai Motor Co Vice-President Mike O'Brien (left), looks on as Hyundai Motor Co senior engineer Dr Dong Jin Hyun demonstrates the H-Mex Hyundai Medical Exoskeleton, which is used to assist people who have trouble walking, on Jan 4. (AFP)

Space

'Most advanced tech'

Beijing tests Lunar Palace, eyes moon

BEIJING, May 11, (Agencies): Chinese students will live in a laboratory simulating a lunar-like environment for up to 200 days as Beijing prepares for its long-term goal of putting humans on the moon.

Four postgraduate students from the capital's astronautics research university Beihang entered the 160-square-metre (1,720-square-foot) cabin — dubbed the "Yuegong-1", or "Lunar Palace" — on Wednesday, the official Xinhua news agency reported.

The volunteers will live in the sealed lab to simulate a long-term, self-contained space mission with no input from the outside world, Xinhua said.

Human waste will be treated with a bio-fermentation process, and experimental crops and vegetables grown with the help of food and waste byproducts.

The cabin represents the "world's most advanced closed-loop life-support technology so far", state broadcaster CCTV said.

China does not expect to land its first astronauts on the moon for at least another decade, but the project seeks to help the country prepare lunar explorers for longer stays on the surface.



Xi

Two men and two women entered the lab on Wednesday for an initial stay of 60 days. They will then be relieved by another group of four, who will stay 200 days, before returning for an additional 105.

The "Lunar Palace" has two plant cultivation modules and a living cabin: 42 square metres containing four bed cubicles, a common room, a bathroom, a waste-treatment room and a room for raising animals.

"I will be in charge of the treatment of solid waste, urine, shredding straw, threshing wheat, processing food and other work," one of the student volunteers told CCTV, adding that other team members would have tasks related to crop growing, health monitoring, and supply inventory.

A successful 105-day trial was conducted in 2014. The Lunar Palace is the world's third bioregenerative life-support base, and the first developed in China.

It is the only such facility to involve animals and microorganisms as well as plants and humans, its chief designer Liu Hong told CCTV, calling it "the first of its kind." China is pouring billions into its military-run space programme and working to catch up with the United States and Europe, with hopes to have a crewed outpost by 2022.

Beijing sees the programme as symbolising the country's progress and a marker of its rising global stature, but so far China has largely replicated activities that the US and Soviet Union pioneered decades ago.

Last month, China's first cargo spacecraft, Tianzhou-1, successfully completed docking with an orbiting space lab.

Chinese President Xi Jinping has called for China to become a global power in space exploration, with plans to send a probe to the dark side of the moon by 2018, the first ever such trip, and to put astronauts on the moon by 2036.

"The latest test is vital to the future of China's moon and Mars missions and must be relied upon to guarantee the safety and health of our astronauts," Liu Zhiheng of the Chinese Academy of Sciences told the news agency.

The Yuegong-1 cabin has a central living space the size of a "very small urban apartment" and two "greenhouses" for plants.

In March, China announced plans to launch a space probe to bring back samples from the moon this year, while the country's first cargo space craft docked with an orbiting space lab in April, a major step as Beijing looks to establish a permanently manned space station by 2022.



Student volunteers are seen inside the Lunar Palace 1, a laboratory simulating a lunar-like environment, in Beijing on May 10. (AFP)



Tillerson

Trump

Discovery

Arctic nations meet: High-level officials from the world's eight Arctic nations will meet in Alaska amid concerns about the future of the sensitive region after President Donald Trump called for more oil drilling and development.

Among those expected to attend the meeting of the Arctic Council beginning Thursday in Fairbanks are US Secretary of State Rex Tillerson and Russian Foreign Minister Sergey Lavrov, who met Wednesday with Trump and Tillerson in Washington.

No formal discussions were set in Alaska but key issues such as climate change, development and drilling will provide a backdrop as the chairmanship of the council passes from the US to Finland.

"We are unsure what the Trump administration thinks about the Arctic region in general, about the Arctic Council in particular and about its role," said Victoria Herrmann, president of The Arctic Institute, a Washington, DC-based group that provides research to shape Arctic policy.

The Arctic Council is an advisory body that promotes cooperation among member nations and indigenous groups. Its focus is sustainable development and environmental protection of the Arctic. (AP)

US cities, states mobilize: Even as President Donald Trump steers the United States away from actively fighting climate change, a number of American cities and states are continuing to pursue renewable energies to reduce their carbon footprint.

Around three dozen states — even some headed by Republicans — have established policies that require power companies to expand the amount of renewable energy they produce in the coming decade.

Beyond the traditional Democratic and pro-environment bastions of California and New York, even states headed by Republican governors including Illinois, Ohio, Michigan, Texas and Iowa have decided to invest massively in clean energy.

"I think the surprise to me is how Republican governors appreciate there are opportunities for economic development for investment for innovation by embracing new technologies, both energy efficiency and clean energy, and in spite of the Trump administration turning their back and in fact trying to put up barriers," said

Health

Designed to limit stumbles among elderly

Robotic exoskeleton prevents 'fall'

PARIS, May 11, (AFP): Scientists unveiled a lightweight, robotic, outer "skeleton" Thursday that can detect when someone loses their balance, correct their gait, and prevent their fall.

Designed to limit stumbles among the elderly, the device has sensors that can discern in real time when a limb starts to buckle or flail, and lightweight motors which exert instant force on both legs to restore balance.

"Wearable machines that enhance your movement and endurance no longer belong to the realm of science fiction," the device's creators said in a statement.

According to the World Health Organization, falls are the second cause of death from accidental or unintentional injuries worldwide.

Every year, more than 420,000 people die from falls — most of those are older than 65.

Nearly 40 million falls that require medical attention are reported annually, says the WHO, and this number is likely to skyrocket as people live to become ever older.

Dubbed the Active Pelvis Orthosis

or APO, the new device could also help disabled people and amputees, said its designers from the Scuola Sant'Anna, an Italian University, and Switzerland's EPFL polytechnical school.

"It's technology that will actually help people with their daily activities," they added.

Results

The team published the results of their lab experiments in the journal Nature Scientific Reports.

The "exoskeleton" is worn from the waist down, its creators explained, "and is vastly different from the armoured stuff you see in today's science fiction movies".

It is attached to a belt worn around the middle that holds small motors at the hips, and soft braces strapped to the thighs.

The device weighs about five kilograms (11 pounds), can be easily adjusted to a person's individual height and girth, and does not interfere with normal walking, the team said.

The "assistive mode" is activated only when balance loss is detected.

"The robotic exoskeleton is able

to identify an unexpected slippage and counteract it," Peppino Tropea, one of the study authors, told AFP.

The APO "increases stiffness at hip joints against limb movements, indeed, the slipping leg is slowed down, while the other one is forced towards the ground. This strategy is effective for balance recovery."

Tropea and the rest of the team tested their creation on eight elderly people and two amputees with prosthetic limbs — two groups particularly vulnerable to potentially devastating falls.

They were made to walk on a treadmill with a platform that would unexpectedly slip sideways, causing the walker to lose balance.

Repeated tests showed that the device "effectively" aided balance recovery, the paper reported.

"I feel more confident when I wear the exoskeleton," a statement quoted 69-year-old Fulvio Bertelli, one of the trial participants, as saying.

A video explaining the invention can be watched here: <https://www.youtube.com/watch?v=Sg4F9FnO19Q>

Dick Munson, head of the Environmental Defense Fund's energy program in the Midwest. (AFP)

Genius' 'scribbles' go online: Nearly 18,000 pages of notes by eccentric French maths genius Alexandre Grothendieck were posted online Wednesday by his alma mater, Montpellier University in southern France.

Grothendieck, who died aged 86 in 2014, "revolutionised an entire area of mathematics, algebraic geometry," said Jean-Michel Marin, head of an institute

that bears the mathematician's name at the university.

"It will take years of work by experts to benefit from his notes," Marin told AFP. "There are only a few hundred people in the world who could understand them."

The papers put on line are part of a trove of 28,000 pages bequeathed by the genius to one of his students, Jean Malgoire, who is still a professor at Montpellier University.

The German-born mathematician's children ceded online publication rights to the university while retaining ownership of the physical documents, which Grothendieck referred to as "scribbles".



An Indian youth swims in the polluted Yamuna river amid rising temperatures in New Delhi on May 9. According to the Central Pollution Control Board (CPCB) which monitors the water quality of the Yamuna in New Delhi, 70% of the pollution of the river is from untreated sewage while the remainder is from industrial sources, agricultural run-off, and domestic garbage. (AFP)

"They contain not only original results but also tools for understanding (Grothendieck's) thinking," Marin said. (AFP)

Egypt finds burial chamber: Egypt's Ministry of Antiquities says a burial chamber dating back about 3,700 years has been found, attached to a recently discovered pyramid belonging to the 13th Dynasty.

The ministry says the discovery was made at an archaeological site in the area of Dahshour, on the outskirts of Giza. The ministry says the chamber was likely that of the daughter of 13th Dynasty King Emnikamaw, whose pyramid is located about 600 meters (yards) away.

Wednesday's statement says the chamber contains four canopic jars and a plate with hieroglyphic writings meant to protect the body. (AP)

P. Rico water worst in US: The US territory of Puerto Rico has the worst drinking water in the nation, and the majority of the island's water supply is in violation of federal standards, a report said Wednesday.

Nearly every person in Puerto Rico — 99.5 percent of the population — was served by water systems that had violations in 2015, including failure to test for contaminants or report problems to the public, said the report by the Natural Resources Defense Council, an environmental advocacy group.

"Puerto Rico suffers the worst rate of drinking water violations of any state or territory in the United States," said co-author Erik Olson, director of NRDC Health Program.

More than 2.4 million people in 2015 — or 69.4 percent of the population in Puerto Rico — got their water from community water systems that violated the federal health-based standards, said the report, based on data from Puerto Rico's Department of Health. (AFP)