BBC

DOES TAKING VITAMINS WORK?

HANNAH FRY'S HIDDEN MATHS OF EVERYDAY LIFE

WHY POSITIVITY IS OVERRATED

Science Focus

ENDING THE YEAR WITH A BANG

SPECIAL ISSUE

RADICAL THEORIES YOU NEED TO KNOW

WILD IDEAS TO BLOW YOUR MIND

AGEING HAS AN OFF-SWITCH

BABIES WITHOUT PREGNANCY

PLANTS ARE CONSCIOUS

MUSHROOMS CAN SAVE THE WORLD

ROBOTS WON'T THINK LIKE US

WE'VE ALREADY FOUND LIFE ON MARS

DEATH IS REVERSIBLE

DARK MATTER IS UNDER OUR FEET

2019's landmark breakthroughs

Here's our pick of the biggest news stories of the last 12 months

SPACE

First plant grown on the Moon

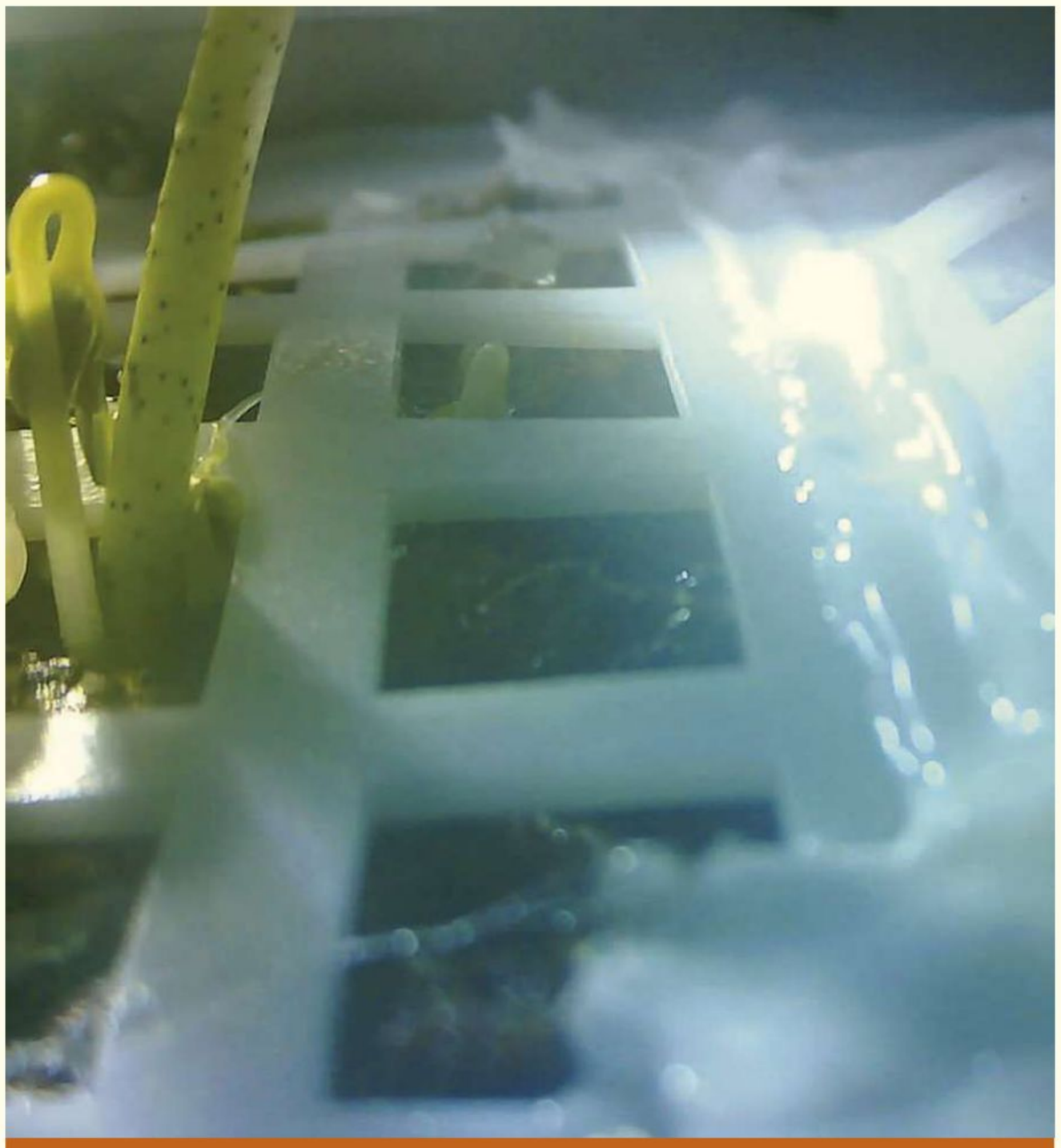
China's Chang'e 4 was the first probe to land on the far side of the Moon. It aimed to test whether we could grow plants on another world

On 3 January, China's Chang'e 4 became the first lunar probe to land on the far side of the Moon. Onboard was the Lunar Micro Ecosystem biosphere experiment, containing air, water, soil and various organisms. Shortly after landing, the experiment was powered up, the internal temperature was adjusted to 24°C, and the seeds watered.

Twelve days later, the Advanced Technology Research Institute at Chongqing University reported that cottonseed, rapeseed and potato seed had sprouted, though only images of the cottonseed were released. The success was short-lived, however, when the following day it was reported that the shoots had failed to survive the freezing temperature of the lunar night. None of the other organisms in the biosphere – mouse-ear cress, yeast or fruit fly eggs – showed any signs of life and the experiment was called off just several days into its planned 100-day stint.

The successful harvesting of plants is seen as a vital part of any long-term space mission, such as establishing a permanent base on the Moon, or even a manned mission to Mars.

China's next mission, Chang'e 5, is scheduled for launch in 2020. It will attempt to collect samples of lunar rock and soil from the surface of the Moon and return them to Earth. There are also whispers that China's space agency has ambitions to build a station near to the Moon within the next decade.



Why do we only ever see one side of the Moon?

Thanks largely to Pink Floyd's 1973 album, astronomers regularly contend with talk of the 'dark side of the Moon'. There isn't one. At least there's no permanently dark side of the Moon. But we do only ever see the front of the Moon and not the back due to an effect called 'tidal locking'. Over time the Earth's gravity slowed the Moon's rotation on its axis until it matched the time it takes to orbit us (both 27.3 days). So, the Moon is rotating, we just never see the other side. The Moon is always half lit up and half not (day and night, just like on Earth). Where this sunlight falls depends on the Moon's position around the Earth. When between us and the Sun the back is completely illuminated – definitely not dark. The only time it is completely dark is when we are experiencing a full Moon.