

SCIENCE THIS WEEK

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The United Launch Alliance Atlas V rocket carrying NASA's Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) spacecraft lifts off from Space Launch Complex 41 at Cape Canaveral Air Force Station, Florida, U.S. | Photo Credit: Reuters

From finding traces of carbon dioxide and methane on an alien planet to discovering tiny jellyfish that can learn from experience, find all the latest news, discoveries and findings that happened in the field of science this week.

Debris from an [alien world](#) will land on the Earth on September 24. NASA's asteroid-hunting spacecraft OSIRIS-REx – short for Origins-Spectral Interpretation-Resource Identification-Security-Regolith Explorer – will drop a capsule containing pristine asteroid material in the Utah desert. OSIRIS-REx, which is currently winging its way towards the earth after a close encounter with Bennu, a near-earth asteroid (NEA), “is a cosmic detective.” Many scientists believe that along with comets, carbon-rich asteroids like Bennu may have seeded the earth with primordial life as they smashed into the young planet more than four billion years ago.

The Indian Space Research Organisation (ISRO), which was hoping to awaken the Chandrayaan-3's Vikram lander and Pragyan rover on Friday, says it has not received any signals from either of the two, despite continuing efforts to establish communications. On September 2, the rover was put into sleep mode; two days later, on September 4, the lander was also put to sleep, following the end of one lunar day.

Scientists in the United Kingdom and the United States have just [reported](#) some very interesting chemical traces in the atmosphere of a planet called K2-18b, which is about 124 light-years from Earth. In particular, they may have detected a substance which on Earth is only produced by living things. The new study found a lot of carbon dioxide and methane. This is interesting as this is like what is found on Earth, Mars, and Venus in our Solar System – rather than Neptune. The only process we know that creates dimethyl sulfide on our planet is life. In particular, marine life and plankton emit it in the form of flatulence.

In a recent paper in *Science*, researchers from China used a new computational technique to analyse about 3,000 present-day human genomes from 10 African and 40 non-African populations. They concluded that the modern human population likely originated only from about [1,200 founding ancestors](#) from a bottleneck. The finding challenges previous estimates that predicted this number to be about 100,000. The scientists also found that our ancestors went through this bottleneck about 900,000 years ago and that the drastic reduction lasted for over

100,000 years.

A recent study published in *Science Advances* found that human activities have pushed the Earth past the 'safe limits' in [six of nine planetary boundaries](#), which scientists have used to measure the planet's health. Crossing the ninth boundary could be altogether disastrous, jeopardising the precarious balance of the earth's ecosystems. The nine planetary boundaries are climate change, deforestation, biodiversity loss, synthetic chemicals and plastics, freshwater depletion, nitrogen loss, ocean acidification, particle pollution, and dust in the atmosphere and ozone depletion.

The Caribbean box jellyfish, or *Tripedalia cystophora*, is known to be able to [navigate](#) through murky water and a maze of submerged mangrove roots. Despite this considerable disadvantage, the Caribbean box jellyfish responds to what is called "operant conditioning". These gelatinous, fingernail-sized creatures are capable of learning from visual cues to avoid swimming into obstacles -- a cognitive ability never before seen in animals with such a primitive nervous system. Their performance of what is called "associative learning" is comparable to far more advanced animals such as fruit flies or mice, which have the notable benefit of having a brain.

The Tasmanian tiger, a dog-sized striped carnivorous marsupial also called the thylacine, once roamed the Australian continent and adjacent islands, an apex predator that hunted kangaroos and other prey. In a scientific first, researchers said on Tuesday they have [recovered RNA](#) - genetic material present in all living cells that has structural similarities to DNA - from the desiccated skin and muscle of a Tasmanian tiger stored since 1891 at a museum in Stockholm. While not the focus of this research, the ability to extract, sequence and analyse old RNA could boost efforts by other scientists toward recreating extinct species.

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