

SCIENCE THIS WEEK

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June 04, 2023 01:51 pm | Updated 01:51 pm IST

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A new Jupiter-size exoplanet with the highest density known till this date and mass 13 times than that of Jupiter. | Photo Credit: Reuters

From discovering a new exoplanet with a mass 13 times that of Jupiter to tracing the evolutionary history of butterflies, find the week's latest findings and discoveries from the world of science.

A new Jupiter-size exoplanet with the highest density known till this date and mass 13 times than that of Jupiter, has been [discovered](#) by an international team of scientists at the Exoplanet Research Group of the Physical Research Laboratory (PRL). The newly discovered exoplanet is found around the star called TOI4603 or HD 245134. It is located 731 light years away and orbits the sub-giant F-type star every 7.24 days. This discovery marks the third exoplanet discovery by India.

Efforts to detect alien technological signatures previously have focused on a narrowband radio signal type concentrated in a limited frequency range or on single unusual transmissions. Now, a [new initiative](#) is focussing on a different signal type that perhaps could enable advanced civilizations to communicate across the vast distances of interstellar space. These wideband pulsating signals for which the scientists are monitoring feature repetitive patterns - a series of pulses repeating every 11 to 100 seconds and spread across a few kilohertz, similar to pulses used in radar transmission. The search involves a frequency range covering a bit less than a tenth the width of an average FM radio station.

The most comprehensive [genomic study](#) ever on primates - a group whose membership includes lemurs, monkeys, apes and people - has revealed pivotal genetic traits that are uniquely human while refining the timeline for our evolutionary lineage's split from our closest cousins, the chimpanzees and bonobos. Scientists sequenced the genomes of 233 primate species, comprising nearly half of those alive today and found greater genetic diversity than humans.

A study [recently found](#) that the H5N1 virus, which spread among wild birds across 30 countries or territories across continents by February 2022 collected different combinations of genes through reassortment with viruses circulating in wild birds in North America. The reassortant viruses are genotypically and phenotypically diverse, with many causing severe disease with dramatic neurologic involvement in mammals. The newer strains of the virus have a greater propensity to cause disease in mammals but currently it is of low-risk to humans. The reason

being that the virus appears better adapted to spread among birds rather than between mammals.

Examining langurs and odd-nosed monkeys [provided](#) scientists with evidence that social behaviours, such as extended care by mothers, evolved by adapting to live in extremely cold climatic conditions in the long-run. Other social behaviours that they studied included increased infant survival and being able to live in large complex multilevel societies. The team integrated ecological, geological, fossil, behavioural and genomic analyses and found that colobine primates inhabiting colder environments tended to live in larger, more complex groups.

An international team of researchers [sequenced](#) 391 genes from nearly 2,300 butterfly species from 90 countries to help reconstruct a new phylogenomic tree of butterflies representing 92% of all general. While the earlier classification was based more on butterfly morphology, the latest attempt has been based on genome sequencing. As a result, the researchers found that at least 36 butterfly tribes (above genus in taxonomical classification) require reclassification.

The ozone layer is not [healing as quickly](#) as expected, leading to higher levels of surface ultraviolet (UV) radiation in recent years, according to a study. Despite projections that the ozone layer would fully recover by mid-century, researchers found rising UV radiation levels in the tropics and northern mid-latitudes after 2010, posing risks to human health and the environment. The study analysed satellite data and model simulations to assess long-term changes in ozone and surface UV levels around the globe. The scientists observed a decrease in ozone levels and an increase in UV radiation over latitudes between 30 degrees South-60 degrees North after 2010.

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