

MM POX

A new analysis shows that the monkey pox, or mpox, virus is rapidly diverging into several lineages characterized by mutations resulting from continued interaction with the human immune system, suggesting that the virus has been circulating in humans since 2016.

The sustained transmission among people marks a fundamental shift in monkey pox epidemiology as a zoonosis, “highlight the need for revising public health messaging around monkey pox and outbreak management and control

Most people fully recover, but some get very sick.

Anyone can get mpox. It spreads from contact with infected:

Persons, through touch, kissing, or sex

Animals, when hunting, skinning, or cooking them

Materials, such as contaminated sheets, clothes or needles

Pregnant persons, who may pass the virus on to their unborn baby.

- The Hindu

Herbivory

MEET MONKEYPOX

In May 2022, new cases of a rare infection, typically limited to Africa, began spreading within Europe and North America. Known as **monkeypox**, this infection is a milder form of smallpox that has seen a gradual increase in cases over the last decade.

What is it?
Monkeypox is a rare disease caused by infection from the monkeypox virus. It is characterized by the following symptoms:

- Swollen Lymph Nodes: This is a key symptom that distinguishes monkeypox from other pox diseases.
- Muscle Aches
- Fever
- Head ache

Within 1-3 days after fever, monkeypox is characterized by a rash of pustules that begin on the face and spread to other regions of the body.

Recent occurrences
as of May 21, 2022

Monkeypox got its name after being discovered in 1958 when two outbreaks of a pox-like disease were discovered in colonies of crab-eating macaques that were kept for research purposes.

How does it spread?
Monkeypox spreads primarily through droplets, though transmission is generally low. It is most commonly spread between humans and animals in a number of ways:

- Via Humans:**
 - Close contact
 - Touching sores or body fluids
 - Touching personal belongings of infected persons
- Via Animals:**
 - Close contact
 - Touching sores or body fluids
 - Biting/scratching
 - Eating infected meat

Can monkeypox be cured?
Monkeypox is able to resolve on its own after 2-4 weeks. There is currently no proven cure or treatment. To help manage symptoms and prevent future outbreaks, we can use:

- Antivirals
- Vaccinia Immune Globulin
- Smallpox Vaccine

Monkeypox virus is a poxvirus, a family of viruses that include smallpox and cowpox. Poxviruses are usually brick or oval shaped and have a genome made of double stranded DNA.

Source: World Health Organization



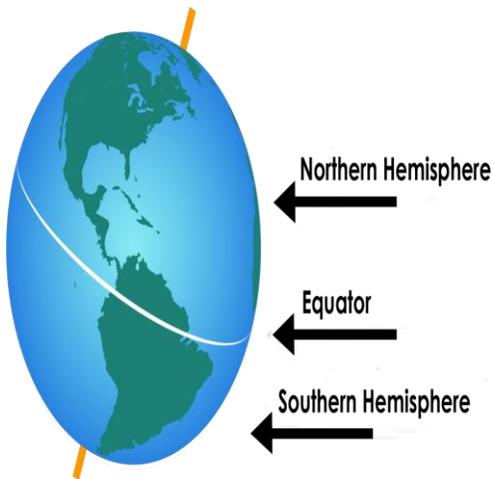
Excluding herbivores or reintroducing their predators may increase vegetation abundance by an average of 93 and 158% at natural regeneration and planted restoration sites, and introducing predators increased abundance by 138 and 372% at natural

regeneration and planted restoration sites.

The meta analysis looked at more than 600 global studies. Herbivory on restoration sites had an overall negative effect on plant abundance and diversity, particularly at sites where restoration was actively promoted.

The Hindu

Decline in water availability



- Accounts for more than 95% of the recent decline in global water

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availability, according to a new study.

- Global land water availability has varied due to climate change and increased human water use.
- The water availability across the Southern hemisphere decreased across the study period. In the Northern hemisphere, there is negligible change in land water availability.

The Hindu

Water evaporation

- Researchers have been puzzled upon finding that water in their experiments, which was held in a sponge like material known as a hydrogel, was evaporating at a higher rate than could be explained by the amount of heat, or thermal energy, that the water was receiving.
- At the interface where water meets air, light can directly bring about evaporation without the need for heat, and it actually does so even more efficiently than heat.
- In this, the water was held in a hydrogel material, but the researchers suggest that the phenomenon may occur under other conditions as well.

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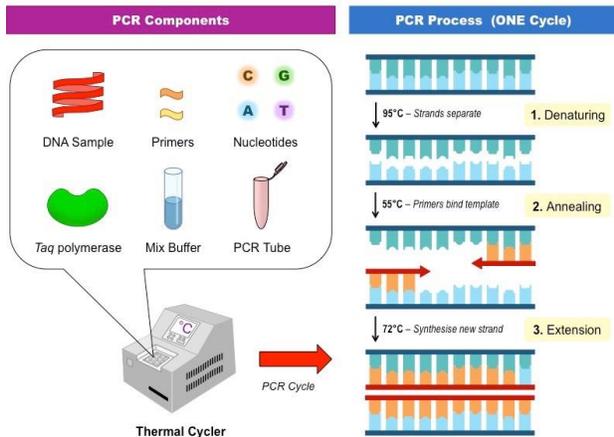
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- The phenomenon might play a role in the formation and evolution of fog and clouds, and thus would be important to incorporate into climate models to improve their accuracy, the researchers say.

The Hindu

PCR and (H. pylori) bacteria

- PCRbased assay of a small region of the Helicobacter pylori (H. pylori) bacteria can help detect H. pylori infection and also identify clarithromycin in resistant bacteria and those which are drug sensitive in six seven hours has been developed by a team of researchers from the National Institute of Cholera and Enteric Diseases (ICMRNICED), Kolkata.



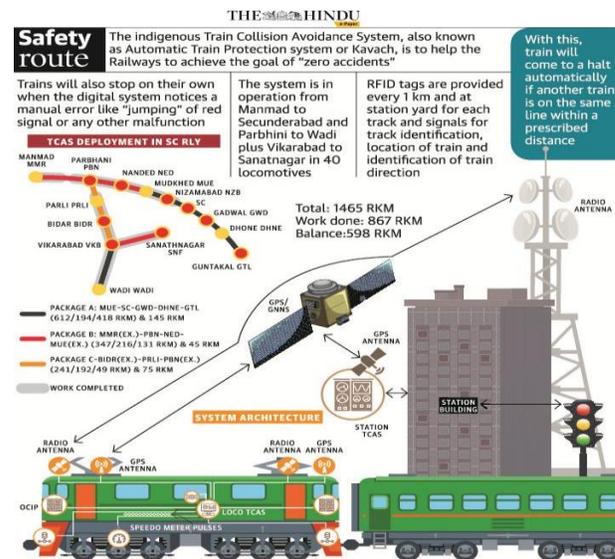
- Since H. pylori bacteria grow slowly, it takes about a week to culture the bacteria and a couple of more weeks to test for drug

sensitivity, which the new diagnostic assay bypasses.

- The molecular based assay has been found to have 100% sensitivity and specificity.
- There is an increasing trend of clarithromycin in resistant H. pylori bacteria in India leading to a decreasing success rate in treating the infection.

The Hindu

KAVACH



What is TCAS Kavach?

- Kavach is a cab signalling train control system with anti-collision features. Simply put, it plays the role of a watchdog over the existing signalling system.
- It was developed over a period of 10 years, starting in 2012, by the

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Indian Railways Research Designs and Standards Organisation (RDSO).

- Kavach is designed to give out warnings to the loco pilot in case he does not notice the 'red signal,' and instead of stopping, is going to overshoot the signal.

How is the Kavach system deployed?

- In the Kavach setup, the railway stations along the route where this tech is sanctioned to be deployed are provided with three components.
- First is Radio Frequency Identification (RFID) technology in the tracks. RFID tech uses radio waves to identify people or objects. It uses electromagnetic fields to automatically identify and read information contained in a wireless device from a distance without making physical contact or requiring a line of sight.
- Secondly, the locomotive, which is the driver's cabin, is provided with RFID readers, computer, and brake interface equipment. And finally, radio infrastructure which are towers and modems are installed at railway stations.