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विज्ञान एवं प्रौद्योगिकी मन्त्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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DTE June 11

INTERNATIONAL SPACE STATION
(Syllabus: GS Paper 3 – Sci and Tech)

What is the multi-drug-resistant pathogen found in the International Space Station?

Context: Scientists from the Indian Institute of Technology Madras (IIT-M) and NASA's Jet Propulsion Laboratory (JPL) have carried out a collaborative study of the behaviour of multi-drug resistant pathogens aboard the **International Space Station (ISS).**

International Space Station (ISS)

- **About:** It is the largest modular space station in low Earth orbit. The project involves five space agencies:
  - The US' NASA, Russia's Roscosmos, Japan's JAXA, Europe's ESA, and Canada's CSA. It orbits Earth approximately every 90 minutes, at an altitude of around 400 kilometers.
- **Designed**: Between 1984 and 1993.
- **Objective**: To enable long-term exploration of space and provide benefits to people on Earth.
- **Orbit**: It orbits earth at an average altitude of 400 km and circles the globe every 90-93 minutes at a speed of 28,000 km/h.

Key findings of Study of Multidrug-Resistant Pathogens

- **Focus:** The study focused on the genomic, functional, and metabolic adaptations of Enterobacter bugandensis, a bacterium notorious for causing hospital-acquired infections.
- **Genomic Adaptations**: One of the pivotal findings from the study underscored the role of stress-induced genomic adaptations in bolstering the pathogen's resistance to antimicrobial treatments.
- **ISS Challenges**: With microgravity, heightened carbon dioxide levels, and increased radiation as constant challenges, the ISS provides a distinctive setting for studying microbial dynamics.

Pathogens

- **About:** It is an organism that induces disease in its host, with the intensity of symptoms termed as virulence.
- **Taxonomy**: Pathogens encompass a broad taxonomic range, including viruses, bacteria, unicellular, and multicellular eukaryotes.
- **Impact on Living Organisms**: Pathogens affect all living organisms, including bacteria, which are preyed upon by specialized viruses known as phages.

LIVEMINT

Page 11

UNIVERSITY GRANTS COMMISSION

(Syllabus GS Paper 2 – Education)

UGC allows universities to offer admissions twice a year

Two admission cycles will be Jul-Aug and Jan-Feb from the 2024-25 academic session

PTI
feedback@livemint.com
NEW DELHI

Indian universities and higher education institutions will now be allowed to offer admissions twice a year on lines of foreign universities with the University Grants Commission (UGC) giving a go ahead to the plan, UGC chief Jagadesh Kumar said.

The two admission cycles will be July-August and January-February from the 2024-25 academic session. "If Indian universities can offer admission twice a year, it will benefit many students such as those who missed admission to a university in the July-August session due to a delay in the announcement of board results, health issues, or personal reasons," Kumar told *PTI*.

"Biannual university admissions will help students maintain motivation since they do not have to wait one full year to be admitted if they miss admission in the current cycle. With biannual admissions in place, industries can also do their campus recruitment twice a year, improving employment opportunities for the graduates," he added. He explained that biannual admissions will enable the higher education institutes (HEIs) to plan their resource distribution, such as faculty, labs, classrooms and support services, more efficiently, resulting in a better functional flow within the university.

> If Indian HEIs adopt the biannual cycle, our global competitiveness will improve and we will align with global educational standards: UGC chief

"Universities worldwide already follow a biannual admission system. If Indian HEIs adopt the biannual admission cycle, our HEIs can enhance their international collaborations and student exchanges. As a result, our global competitiveness will improve, and we will align with the global educational standards," Kumar said.

"If HEIs adopt biannual admissions, they need to work on administrative intricacies, good planning for increased use of available resources, and providing seamless support systems for the smooth transition of students admitted at dissimilar times of the year. HEIs can maximize the usefulness of biannual admissions only when they sufficiently prepare faculty members, staff and students for the transition," he added.

Kumar, however, clarified that it will not be mandatory to offer biannual admissions for universities and those HEIs that have the required infrastructure and teaching faculty can utilize the opportunity.

Context: University Grants Commission (UGC) has decided to allow higher education institutions to admit students twice a year, starting from the next academic year.

University Grants Commission (UGC)

- **About:** A regulatory body that oversees higher education in India.
- **Statutory body:** A statutory body established by the Indian government in the year 1953, in conformity with the UGC Act 1956.
- **Headquarters:** New Delhi
- **Nodal Ministry:** Ministry of the education department.

Objective:

- The University Grants Commission is to determine, coordinate, and maintain the standards of the teaching, examinations, and research pertaining to higher education.
- The University Grants Commission provides accreditation to higher educational institutions and universities in India along with the provision of funds.

Functions:

- **Determination of Standards:** UGC is responsible for determining and maintaining the standards of university education across the country.
- **Funding:** It provides financial assistance to universities and colleges and formulates schemes for the distribution of funds.
- **Recognition of Universities:** UGC grants recognition to universities and colleges and maintains a list of recognized universities.
- **Coordination:** UGC facilitates coordination and collaboration among universities and other educational institutions.
- **Quality Assessment:** It conducts assessments and evaluations of universities to ensure quality education.
- **Granting Autonomy:** UGC grants autonomy to universities and colleges based on their performance and adherence to quality standards.

INDIAN EXPRESS Page 13

DONANEMAB

(Syllabus: GS Paper 3 – Sci and Tech)



Scientists back new Alzheimer's drug: its benefits vs the risks

ANONNA DUTT
NEW DELHI, JUNE 11

DONANEMAB, a new therapy for Alzheimer's disease developed by drug maker Eli Lilly, has received unanimous support from independent scientists advising the United States Food and Drug Administration (USFDA), bringing it a step closer to clinical use.

"The potential risks of donanemab, appropriately managed as instructed in labeling, are outweighed by the demonstrated benefits on the clinical endpoints in those with AD (Alzheimer's disease)," the FDA advisory committee said in a briefing document.

With two predecessors with a similar mechanism of action having been approved by the regulator, the convening of the advisory committee in March had come as a surprise to many, including the company.

How do the benefits of the drug stack up against its risks?

The drug is meant only for the early stages of Alzheimer's — those who have mild cognitive impairment or mild dementia. The drug shows significant clinically meaningful slowing of the disease — meaning a person on the drug retains their functions for a longer time.

Most ARIA events — amyloid-related imaging abnormalities such as brain bleeds and seizures — were found to be non-serious, and resolved or stabilised after discontinuation of therapy, according to the FDA document weighing the risks and benefits.

"The key risks can be mitigated through appropriate labeling and clinical monitoring, and further characterized through post-authorization studies... Overall, given the seriousness of AD and the limited options for disease-modifying treatments, donanemab provides a clinically meaningful treatment benefit for patients with AD," the document said.

What is donanemab; how does it work?

Like the two other Alzheimer's drugs approved over the past three years, donanemab is a monoclonal antibody that targets deposits of amyloid beta proteins in the brain, one of the defining features of Alzheimer's disease.

The phase 3 study shows that donanemab slows down cognitive decline in early Alzheimer's patients by 35.1% at 76 weeks. The result was based on a study with 1,736 patients, of whom 860 received the infusion every four weeks till the amyloid beta plaque cleared.

The main adverse effect is swelling or bleeding in the brain, most of which is asymptomatic. The study showed that 24% participants given donanemab had brain swelling and 19.7% had brain bleeds. Three treatment related deaths were reported.

EXPLAINED MEDICINE

Why is this breakthrough important?

Dr M V Padma Srivastava, Chairperson of Neurology at Paras Health, Gurugram, and former head of the department of neurology at AIIMS, Delhi said: "The world is getting older and the burden of diseases such as Alzheimer's is on the rise. Most countries around the world need drugs such as this. In developing countries with huge populations, the burden [of Alzheimer's] is likely to be higher."

An estimated 5.3 million people are currently living with dementia in India. Alzheimer's is one of the most common forms of dementia. This prevalence is likely to increase to 14 million by 2050.

Dr Srivastava, however, said that these "horrendously" expensive drugs need to be evaluated against the benefits that they bring. "While the treatment can give a few more good years to a person, should they sell their home to get the treatment? These things have to be decided," she said.

She agreed, however, that "it is a much-needed innovation and could pave the way for something better."

Why was the approval delayed?

Earlier this year, Eli Lilly was informed that the USFDA wanted to understand further the data relating to the therapy, including implications of the limited dosing protocol.

During the trial, the therapy was stopped in patients who achieved a certain level of clearing of amyloid beta plaques. This limited dosing is one of the features that sets donanemab apart from the two other therapies approved in the category.

The additional scrutiny of the drug also came after a US congressional committee examined the approval process for the first drug, aducanumab, developed by Japanese and American companies Eisai and Biogen, and found it to be "rife with irregularities".

The committee found an unusually close collaboration with the drugmaker, and that approval was given even after the clinical trial was cancelled by the company after an independent report indicated that the drug was unlikely to effectively slow cognitive decline and functional impairment, and despite an expert panel's recommendation against it.

The second drug, lecanemab, also developed by Biogen, was greeted with cautious optimism by doctors. This is because it indeed demonstrated a slowing of cognitive decline with fewer side effects for a disease that does not have any effective treatment yet.

Context: After much debate, a committee of independent advisers recently voted unanimously that the benefits of the new Alzheimer's drug, Donanemab, outweigh its risks.

Alzheimer Disease

- **About**: It is a brain disorder that slowly destroys memory and thinking skills and, eventually, the ability to carry out the simplest tasks.
- **Occur**: Between a person's 30s and mid-60s (mostly) and is very rare.
- **Impact Areas**: The brain is responsible for cognition, memory, and language.
    - It can significantly hinder an individual's capacity to perform routine daily tasks.
- **Symptoms**: Memory loss, language problems, and unpredictable behaviour.
- **Cure**: So far, there has been no concrete cure, but some treatments are done to reduce its effectiveness.

Donanemab

- **About:** It is a monoclonal antibody that targets amyloid beta protein plaques in the brain, one of the defining features of Alzheimer's disease that can be seen on imaging.
- **Mechanism of Action:** Donanemab works by helping the body remove amyloid plaque buildups in the brain that are a hallmark of Alzheimer's disease.
- **Harmful Deposits:** These plaques are harmful deposits that can form in the brain as people age.
    - Removing the plaque seems to slow down the brain changes that seem to happen with Alzheimer's.
- **Immune System Activation**: As the drug enters the brain, it binds to the amyloid plaques, and its presence catches the attention of the immune system, which facilitates plaque removal.
- **Prevention**: There is no cure and there is still no drug to prevent the development of Alzheimer's, but donanemab and Leqembi, another drug that is already on the market, show promise.

Japan-India Maritime Exercise Commences At Yokosuka

Context: Japan-India maritime exercise (Jimex 24) commenced at Yokosuka in Japan.

Jimex 24

- **About**: This exercise is conducted biennially between the Indian Navy and Japanese Maritime Self-Defense Force (JMSDF).
- This is the eighth edition of JIMEX
- **Inception:** 2012
- **Phases:** The exercise includes both harbour and sea phases.
  - The harbour phase will comprise professional, sports and social interactions, after which the two navies will jointly hone their war fighting skills at sea and enhance their interoperability through complex multi-discipline operations in the surface, sub-surface and air domains.
- **IN is being represented by**: INS Shivalik
- **JMSDF is being represented by**: Guided Missile Destroyer JS Yugiri.
- **Significance**: The exercise is taking place in the backdrop of growing concerns over China's military muscle flexing in the Indian Ocean Region as well as in the Indo-Pacific.
  - India has significantly expanded its deployment in the Indian Ocean Region with a plethora of warships and submarines following the border row with China.

Other Exercises between India and Japan

- Annual joint land military exercise named 'Dharma Guardian'.
- Joint Air Force exercise 'Shinyuu Maitri'.
- Trilateral Maritime Exercise Malabar with the USA.

INDIAN EXPRESS

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APPLE INTELLIGENCE

(Syllabus: GS Paper 3 – Sci and Tech)

Meet Apple Intelligence, the new AI coming to iPhone, iPad and

BIJIN JOSE
NEW DELHI, JUNE 11

APPLE INTELLIGENCE, the company's long-awaited deeper push into AI technology, was unveiled at the Worldwide Developers Conference (WWDC) in Cupertino, California, on Monday. It is powered by generative AI — a type of AI that can generate new content like text and images often in response to prompts — and will be integrated into iPhone, iPad, and Macbook.

EXPLAINED AI

What is Apple Intelligence?

According to the company, Apple Intelligence is a system that combines the capabilities of generative AI models with personal context to deliver personalised intelligence — which means that it understands user behaviour and generates appropriate responses. It is like OpenAI's ChatGPT but with more contextual awareness. Apple Intelligence can know the user's likes and dislikes, online preferences, can keep a tab on their calendar, etc.

The new AI tool will run on Apple Silicon (a processor designed by Apple) and will be able to comprehend and create language and images, work across applications, and simplify and enhance everyday tasks.

What can Apple Intelligence do?

Apple Intelligence will let users improve their writing and communicate with more ease. Apple is bringing systemwide writing tools that are built into iOS 18, iPadOS 18, and MacOS Sequoia. These tools will allow users to write, rewrite, proofread, and summarise text almost anywhere they write, including on third-party apps.



Apple Intelligence will help users write better, according to Apple. *Apple*

Apple Intelligence will help users feel more confident in their writing, according to the company. For example, the rewrite feature will show users different versions of what they wrote. These versions will adjust the tone to suit their audience and the task at hand.

The new AI tool will make it easier to manage emails by showing a new section at the top of the inbox with the most urgent emails and summarising emails without the need to open them.

Apple Intelligence will also enable users with creative ways of expression. It will introduce a feature called Image Playground that will allow users to create images in seconds. They can pick from three styles: animation, illustration, or sketch. There will be an image generator as well, which will create emojis through the user's prompts.

The new AI tool will make searching for pictures on iPhones more convenient. Apple has claimed that users can use "natural language" for searching specific photos. For example, one can search images using simple prompts like "Katie with stickers on her face". This will also be applicable to videos, as users will be able to find specific moments in clips.

How will it improve Siri?

With Apple Intelligence, Siri — Apple's virtual assistant — will now be more contextually aware and come with richer language-understanding capabilities. It will be more natural, contextually relevant, and more personal. Apple claims that Siri will follow along if a user stumbles over their words and it will maint
request to the next.

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Context: Apple recently introduced **Apple Intelligence**, a personal system for iPhone, iPad, and Mac, **combining generative models** with personal context for highly relevant intelligence.

Apple Intelligence

- **About:** AI as a personal intelligence system that has been built for iPhone, iPad, and Mac.
- **Generative AI**: It combines the capabilities of generative AI models with personal context to deliver personalized intelligence.
- **User Behavior**: This means that it understands user behavior and comes up with appropriate responses.
- **Awareness**: It is like ChatGPT but with more contextual awareness — it knows the user's likes and dislikes, online preferences, and keeps a tab on their calendar, etc.

Apple Capabilities

- **Improving Writing and Communication:** Apple Intelligence lets users improve their writing and communicate with more ease.
- **Systemwide Writing Tools:** Apple is bringing systemwide Writing Tools that are built into iOS 18, iPadOS 18, and macOS Sequoia.
- **Enhanced Text Handling**: These tools will allow users to write, rewrite, proofread, and summarize text almost anywhere they write including Notes, Pages, Mails, and even third-party apps.

DTE June 11

LYNX
(Syllabus: GS Paper 3 – Env and Eco)

On International Lynx Day, Iberia offers a story of miracle and hope

Context: While Bengal tigers, Asiatic lions, and Indian leopards often steal the spotlight, the lesser-known lynx is another member of the Felidae family gaining attention among Indians.



Lynx

- **About:** These are medium-size, solitary wildcats that roam the forests of North America, Europe, and Asia.
- **Habitat in India:** The lynx is found in India, specifically in the frozen cold desert of Ladakh.
- **Lynx in Europe**: In Europe, the lynx is considered one of the three major predators along with the gray wolf and the brown bear.
    - Europe is home to two of the world's four types of lynx: the larger Eurasian lynx and the smaller Iberian lynx.
    - The Eurasian lynx, one of Europe's largest predators, has rebounded from near-extinction but remains critically endangered in certain areas like the Voges, Palatinian forest, Bohemian-Bavarian forest, and the Balkans.
- **Conservation status:** IUCN- Near Threatened
- **Importance:** Lynxes play a crucial role in their natural habitats, serving as apex predators that help maintain ecosystem balance.
- **International Lynx Day**: June 11th, celebrates and raises awareness about the conservation of lynxes worldwide.

ALL INDIA RADIO

June 11

QUALITY COUNCIL OF INDIA (QCI)

(Syllabus: GS Paper 3 – Economy)

Quality Council Of India Celebrates World Accreditation Day Across More Than 20 Cities In India

Context: The Quality Council of India (QCI) celebrated World Accreditation Day across over 20 cities in India.

Quality Council of India (QCI)

- **About:** It is a **National body for Accreditation**, set up through a **PPP model** as an independent autonomous organization with the support of **Government of India and the Indian Industry** represented by the **three premier industry associations**:
- **Established in:** 1997.
  - Associated Chambers of Commerce and Industry of India (ASSOCHAM),
  - Confederation of Indian Industry (CII), and
  - Federation of Indian Chambers of Commerce and Industry (FICCI).
- **Type of Body:** A non-profit organization registered under the **Societies Registration Act, 1860.**
- **Nodal Department:** The Department for Promotion of Industry and Internal Trade (DPIIT) - Ministry of Commerce and Industry).
- **Composition**: Governed by a 38-member Council with equal representation from government, industry, and consumers.
  - The Chairman of QCI is appointed by the Prime Minister based on the industry's recommendation to the government.
- **Objectives:** To lead nationwide quality movement in India by involving all stakeholders for emphasis on adherence to quality standards in all spheres of activities primarily for promoting and protecting interests of the nation and its citizens.
- **Accreditation:** It is the independent evaluation of conformity assessment bodies against recognised standards to carry out specific activities to ensure their impartiality and competence.

HINDUSTAN TIMES

June 11

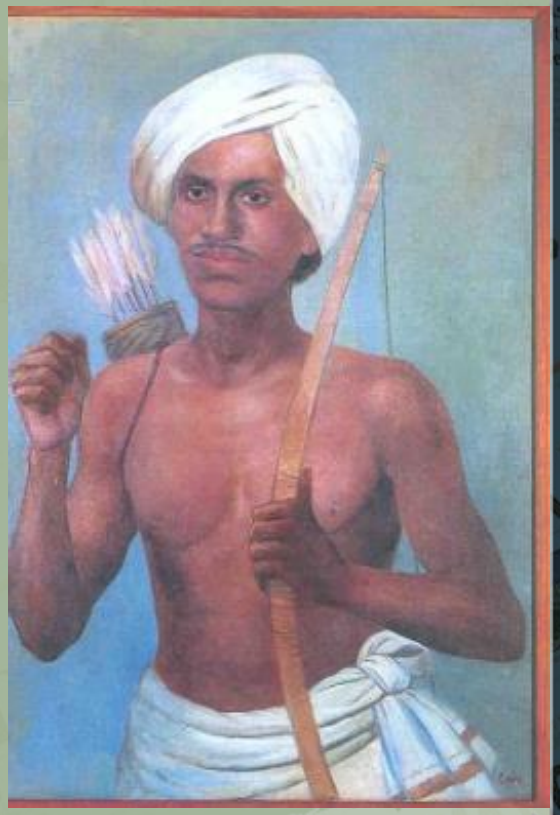
BIRSA MUNDA

(Syllabus: GS Paper 1 – History)

Jharkhand Guv, CM pay homage to Birsa Munda on his death anniversary

Context: The Jharkhand Governor and Chief Minister recently paid tribute to tribal icon Birsa Munda on his death anniversary.

Birsa Munda



- **About**: He was an influential Indian tribal independence activist and a revered figure among the Munda tribe.
- **Born:** on 15 November 1875
- **Leadership:** Birsa Munda played a pivotal role as the leader of a tribal religious millenarian movement that emerged in the late 19th century within the Bengal Presidency, which is now part of Jharkhand.
- **Significance**: Operating during the British Raj, Birsa Munda's efforts made him a notable figure in the history of the Indian independence movement, contributing significantly to the struggle against colonial rule.
- **Geographical Focus of the Revolt:** The rebellion primarily unfolded in the Munda belt, specifically in Khunti, Tamar, Sarwada, and Bandgaon, showcasing the concentrated resistance against British rule in these regions.
    - Birsa motivated tribal communities by raising awareness about their cultural heritage and rights. He led organized uprisings that targeted bazaars, government officials' residences, and prominent traders' homes.
- **Title:** His leadership during the rebellion earned him the title "Bhagwan" or "Birsa Bhagwan" among his followers, symbolizing his revered status.
- **Legislative Impact:** His struggle led to the passing of the Chotanagpur Tenancy Act in 1908, safeguarding tribal land rights from non-tribal exploitation.

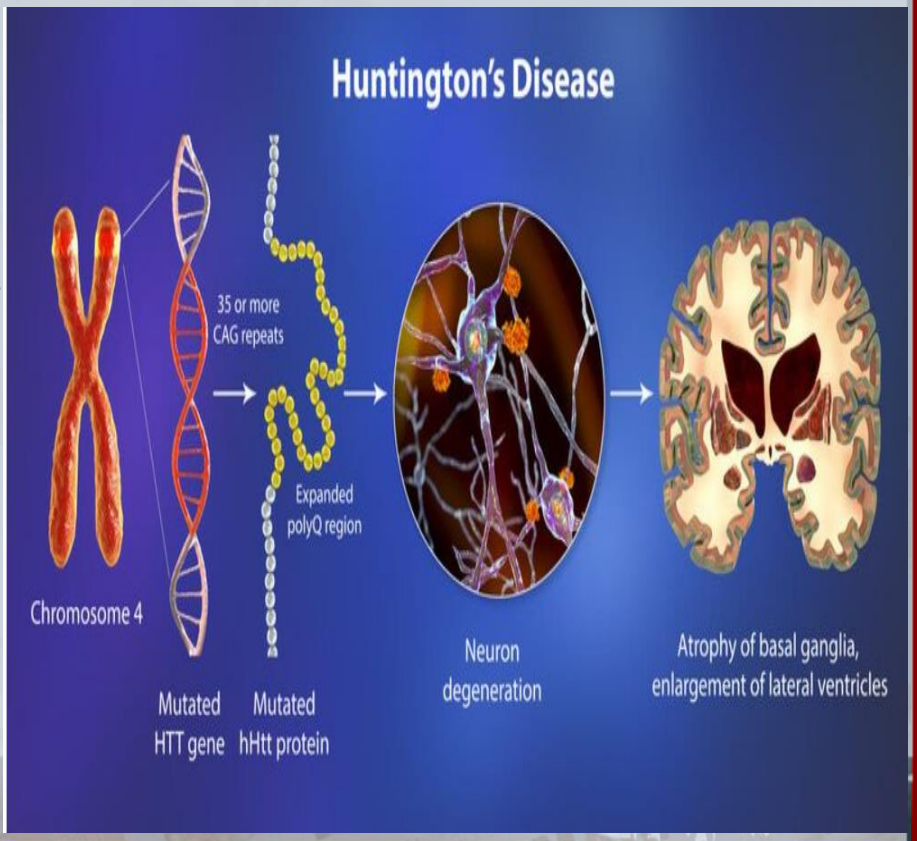
HUNTINGTON'S DISEASE
(Syllabus: GS Paper 3 – Sci and Tech)

Scientists develop new methods to detect Huntington's disease progression

Context: A team of scientists in the UK recently developed non-invasive measurement techniques and novel analysis methods to decode disease progression and evaluate the effect of potential treatments or lifestyle changes in people with Huntington's disease.

Huntington's Disease

- **About**: It is an inherited disorder leading to the gradual degeneration and death of neurons in specific brain regions.
- **Types of Huntington's Disease:**
- **Adult-Onset HD:** The most prevalent form, typically manifesting symptoms in one's mid-30s or 40s.
- **Early-Onset HD:** Affecting a minority, it initiates in childhood or adolescence.
- **Caused by**: A mutation in the gene for a protein called huntingtin.
- **Symptoms**:
  - HD manifests varied movement, cognitive, and psychiatric symptoms.
  - Patients experience mood swings, reasoning difficulties, involuntary movements, and challenges in speech, swallowing, and mobility.
- **Treatment:** Currently, there's no cure for HD, nor any means to halt its progression.
  - Treatment aims to alleviate symptoms and prolong functional abilities.



INDIAN EXPRESS

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KAZIRANGA NATIONAL PARK

(Syllabus: GS Paper 3 – Env and Eco)

KAZIRANGA CORRIDOR

Road fencing hits movement of animals: Activist writes to Ministry

EXPRESS NEWS SERVICE
NEW DELHI, JUNE 11

AN ASSAM-BASED activist has urged state and Central authorities to take remedial measures to address the impact of road fencing, widening work and non-functional car-speed sensor cameras on the safety of animals using wildlife corridors in and around Kaziranga National Park.

The activist, Rohit Choudhury, wrote to the Assam Forest Department, the Environment Ministry and the National Tiger Conservation Authority flagging these issues earlier last week. The activist pointed out that in the Burapahar Forest range, the PWD was widening NH-37 and had erected concrete and metal posts along the roadside with cable fencing. During the flood season, rhinos, elephants and even tigers are forced to migrate towards the Karbi Anglong Hills via NH-37 and the fencing obstructs this movement, Choudhury wrote.

The Indian Express reached out to the Kaziranga Park administration but didn't receive a response.



Context: An Assam activist recently urged authorities to address the impact of roadwork and faulty speed cameras on animal safety in Kaziranga National Park's wildlife corridors.

Kaziranga National Park

- **Location**: Located at Golaghat and Nagaon districts of Assam.
- **Flora**: Tall elephant grass, marshland, and dense tropical moist broadleaf forests.
- **Fauna:** One-horned rhinos; Elephant; Royal Bengal tiger and Asiatic water buffalo. It is the home of the world's most one-horned rhinos and has the second-highest number of Rhinos after Pobitora Wildlife Sanctuary, situated in Assam.
- **River**: Located on the edge of Brahmaputra River and Diphlu River flows through the National Park.
- **National Highway (NH)**: NH 37 passes through the National Park.
- **Conservation status**:
  - National Park in 1974.
  - UNESCO World Heritage Site in 1985.
  - Tiger Reserve in 2007.
  - An Important Bird Area by Birdlife International.
- **Other national parks in Assam are:**
  - Dibru-Saikhowa National Park,
  - Manas National Park,
  - Nameri National Park,
  - Rajiv Gandhi Orang National Park.
  - Raimona National Park
  - Dihing-Patkai National Park

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