

# UPSC CURRENT AFFAIRS NOTES 12-04-2024

## Mange Disease

The forest department is monitoring an outbreak of mange among a pack of Asiatic wild dogs in the Mudumalai Tiger Reserve (MTR) in the Nilgiris.

### About Mange Disease



It is a skin disease of animals caused by mite infestations, characterized by inflammation, itching, thickening of the skin, and hair loss.

The most severe form of mange is caused by varieties of the mite *Sarcoptes scabiei*, which also causes human scabies.

Some form of mange is known in all domestic animals, although many varieties of mange mites infest only one species.

Transmission: They are transmitted between animals by direct contact and by objects that have been in contact with infected animals. Most forms of mange are treatable.

### Key facts about Asiatic wild dogs



It is a wild canid found in the forests of central, south, and southeast Asia.

Other Names: Indian wild dog, whistling dog, red wolf, red dog and mountain wolf.

### **Distribution**

They are found throughout Eastern and Southeastern Asia.

They can be seen as far north as Siberia, as far south as some Malaysian islands, and as far west as the Indian peninsula.

They are found in three clusters across India, namely the Western and Eastern Ghats, the central Indian landscape and North East India. The Western and Eastern Ghats is a stronghold region for dholes.

Habitat: Dholes are animals that inhabit dense jungles, steppes, mountains, scrub forests, and pine forests.

Conservation status

IUCN Red List: Endangered

The Wildlife Protection Act 1972: Schedule II

CITES: Appendix II

### **Boreal forests**

These are defined as forests growing in high-latitude environments where freezing temperatures occur for 6 to 8 months and in which trees are capable of reaching a minimum height of 5 m and a canopy cover of 10%.

## **Doctrine of Harmonious Construction**

While refusing to condone the delay of 5659 days in preferring an appeal, the Supreme Court recently laid down eight principles by providing harmonious construction to Sections 3 and 5 of the Limitation Act, 1963.

About Doctrine of Harmonious Construction

It is an essential rule for interpreting statutes.

It states that when there's a conflict between two or more statutes or between different parts or provisions of a statute, we should interpret them in a way that harmonises them.

This means that when there are inconsistencies, we should try to reconcile the conflicting parts so that one part doesn't negate the purpose of another.

## Harmonious Construction



It is rooted in the fundamental legal principle that every statute is created with a specific purpose and intent. Therefore, it should be understood as a whole.

The intention of the legislature is that every provision should remain operative.

But when two provisions are contradictory, it may not be possible to effectuate both of them, and as a result, one will be rendered futile as against the settled basic principle of 'ut res magis valeat quam pereat' (that a thing is better understood so that it may have an effect than that it should be made void).

Therefore, the court should interpret the laws in a way that removes the inconsistency and allows both provisions to remain in force, working together harmoniously.



The goal is to give effect to all the provisions. To avoid conflicts, the interpretation of the statute should be consistent with all its parts.

If it's impossible to harmoniously interpret or reconcile the different parts or provisions, then it's the responsibility of the judiciary to make the final decision and give its judgment.

In the landmark case of Commissioner of Income Tax v. M/S Hindustan Bulk Carriers (2000), the Supreme Court established five fundamental principles governing the rule of harmonious construction:

Courts should make every effort to avoid conflicts between seemingly conflicting provisions and should attempt to interpret these provisions in a way that harmonises them.

A provision in one section of the law should not be used to nullify a provision found in another section unless the court is unable to find a way to reconcile their differences despite diligent effort.

In cases where it's impossible to completely reconcile inconsistencies between provisions, the courts must interpret them in a manner that gives effect to both provisions to the greatest extent possible.

Courts must consider that an interpretation rendering one provision redundant or useless goes against the essence of harmonious construction and should be avoided.

Harmonizing two contradictory provisions means preserving and not destroying any statutory provision or rendering it ineffective.

The Limitation Act, 1963 is an Indian statute of limitations that sets out the time limits within which legal proceedings must be initiated in India. The Act establishes the maximum time period for which a lawsuit can be brought after the occurrence of a particular event. It provides a framework for determining the limitation period applicable to different types of legal actions, such as contracts, torts, and suits for possession of property.



## GPT-4 Vision

Following its launch, OpenAI's ChatGPT has evolved by leaps and bounds and also recently announced API access to GPT-4 with Vision.

### About GPT-4 Vision

It is also referred to as GPT-4V which allows users to instruct GPT-4 to analyse image inputs.



It has been considered OpenAI's step forward towards making its chatbot multimodal — an AI model with a combination of image, text, and audio as inputs.

It allows users to upload an image as input and ask a question about it. This task is known as visual question answering (VQA).

It is a Large Multimodal Model or LMM, which is essentially a model that is capable of taking information in multiple modalities like text and images or text and audio and generating responses based on it.

### Features

It has capabilities such as processing visual content including photographs, screenshots, and documents. The latest iteration allows it to perform a slew of tasks such as identifying objects within images, and interpreting and analysing data displayed in graphs, charts, and other visualisations.



It can also interpret handwritten and printed text contained within images. This is a significant leap in AI as it, in a way, bridges the gap between visual understanding and textual analysis.

### **Potential Application fields**

It can be a handy tool for researchers, web developers, data analysts, and content creators. With its integration of advanced language modelling with visual capabilities, GPT-4 Vision can help in academic research, especially in interpreting historical documents and manuscripts.

Developers can now write code for a website simply from a visual image of the design, which could even be a sketch. The model is capable of taking from a design on paper and creating code for a website.

Data interpretation is another key area where the model can work wonders as the model lets one unlock insights based on visuals and graphics.

### **chatbots**

These are a computer program that simulates and processes human conversation (either written or spoken), allowing humans to interact with digital devices as if they were communicating with a real person.

## **Adjudicating Authority under the Prevention of Money Laundering Act (PMLA)**

The Adjudicating Authority under the PMLA recently confirmed the attachment of assets worth Rs 751.9 crore belonging to the National Herald newspaper.

### **About Adjudicating Authority under the PMLA**

Under PMLA, an adjudicating authority determines within 180 days whether the properties attached by the Enforcement Directorate (ED) are involved in money laundering or not.

### **Functioning:**

Section 5 of the PMLA provides for the attachment of any property that is suspected to have been acquired with the proceeds of crime in a case of any offence that is listed in the schedule of the law.



The attachment order is issued if the ED Director feels that “such proceeds of crime are likely to be concealed, transferred, or dealt with in any manner which may result in frustrating any proceedings relating to confiscation of such proceeds of crime”.

**This provisional attachment order is valid for a period of 180 days.**

It must be confirmed within this time by an adjudicating authority appointed by the central government, failing which the property is automatically released from attachment.

Because the initial attachment is provisional, the accused can continue to enjoy the property until the adjudicating authority confirms the attachment, after which the ED has the power to claim possession.

What happens after the Adjudicating Authority confirms the attachment?

The accused has the right to challenge the adjudicating authority’s confirmation order at the PMLA’s Appellate Tribunal within 45 days.

If the Appellate Tribunal too confirms the order, the accused can file a plea in the High Court, and so on.

Unless the property is released along the way, it shall remain out of bounds for the owner until the trial is completed.

Following final confirmation, in the case of a residential property, the ED will ask the owner to vacate the premises along with his belongings, and will take over possession.

In case of a conviction, the trial court may order confiscation of the attached property, and vest the rights to the property with the central government.

Attached properties may remain locked for years as the legal process continues, and may start to crumble and decay.

## ADB's GDP Growth Forecast for India

The Asian Development Bank (ADB) has revised India's GDP growth forecast for FY 2024 to 7% and 7.2% for FY 2025, citing robust public and private investment and a strong services sector.



**Factors Driving Growth:** Higher capital expenditure on infrastructure development, increased private corporate investment, strong service sector performance, and improved consumer confidence are key drivers of growth.

### Drivers of Growth

**Public and Private Investment:** A significant rise in central government capital expenditure and transfers to state governments is expected to boost infrastructure investment. Stable interest rates are likely to spur private corporate investment.

**Services Sector Performance:** Demand for financial, real estate, and professional services is projected to grow, contributing to overall economic expansion.

**Agriculture Sector Growth:** Expectations of a normal monsoon are anticipated to boost agricultural output, further fueling economic growth.

### Government Initiatives and Policies





**Infrastructure Development:** Government efforts to boost infrastructure development and provide an enabling business environment are expected to enhance manufacturing competitiveness and drive future growth.

**Fiscal Consolidation:** The government's focus on fiscal consolidation, with targeted deficits for FY 2024 and FY 2025, aims to reduce gross marketing borrowing and create room for private sector credit.

### **Risks and Challenges**

**Global Shocks:** Unanticipated global shocks, such as supply disruptions in crude oil markets and weather-related impacts on agriculture output, pose risks to India's economic outlook.

**Foreign Investment and Exports:** Tight global financial conditions may affect foreign direct investment in the near term, while lower growth in advanced economies could impact goods exports.

### **ADB's Commitment**

**Inclusive Growth:** ADB is dedicated to achieving prosperity, inclusivity, resilience, and sustainability in Asia and the Pacific, with ongoing efforts to eradicate extreme poverty.

Established in 1966, ADB is owned by 68 members, with a mission to support regional development and cooperation.

## **Global Trade Outlook and Statistics Report**

The World Trade Organization (WTO) anticipates a gradual recovery in global trade, with a projected increase of 2.6% in 2024 and a further rise of 3.3% in 2025.

These forecasts follow a 1.2% decline in 2023, primarily attributed to inflationary pressures and higher interest rates.

According to the WTO's chief economist Ralph Ossa, the expected rebound is driven by the normalization of inflation and monetary policy. These factors, which hindered trade in 2023, are anticipated to ease.

**Broad-Based Recovery:**



The trade recovery is expected to be broad-based, encompassing regions like Europe, which experienced significant declines in trade volumes in 2023 due to geopolitical tensions and the energy crisis triggered by Russia's invasion of Ukraine.

### **Persistent Risks:**

While global trade has shown resilience, the WTO warns of lingering geopolitical risks.

Ongoing conflicts, such as the Israel-Palestine conflict, pose potential disruptions, particularly if they affect energy markets.

#### Geopolitical Fragmentation:

The WTO's report highlights a trend of trade fragmentation along geopolitical lines, with slower growth observed between certain blocs.

Trade tensions between major economies like the U.S. and China have contributed to this phenomenon.

#### Continued U.S.-China Tensions:

Recent statements from U.S. Treasury Secretary Janet Yellen and European Commission chief Ursula von der Leyen indicate renewed tensions with China over trade practices.

Allegations of unfair practices, including the dumping of subsidized goods, remain contentious.

### **Regional Outlook:**

While the WTO report does not provide specific forecasts for China, it anticipates a 3.4% increase in Asia's exports for 2024 and 2025. Despite this, sector-specific surges are possible.

## **FIBRONECTIN**

**Objective:** Investigating why certain individuals with a high-risk gene variant (APOEε4) for Alzheimer's disease remain protected from developing the condition.

**Findings:**



A mutated version of a gene responsible for fibronectin production reduces the risk of developing Alzheimer's by 71%.

This fibronectin variant also delays disease onset by approximately four years in individuals who eventually develop Alzheimer's.

### **Role of Fibronectin in Alzheimer's**

**Blood-Brain Barrier (BBB) Function:**

Fibronectin is a component of the BBB, which regulates the movement of substances into and out of the brain.

Maintaining the integrity of the BBB prevents the accumulation of amyloid beta protein in the brain, a hallmark of Alzheimer's.

**Protective Mechanism:** The fibronectin variant identified in the study prevents the build-up of fibronectin, thereby preserving BBB function and facilitating amyloid clearance.

### **Implications for Treatment**

**Potential Therapeutic Target:** Drugs that reduce excess fibronectin could offer protection against Alzheimer's by maintaining BBB integrity and promoting amyloid clearance.

**Drug Development:** Identifying compounds that target fibronectin could lead to novel treatments for Alzheimer's, potentially addressing the disease's underlying pathology rather than just its symptoms.

### **About Fibronectin**

It is a high-molecular-weight glycoprotein found in the extracellular matrix and circulating in the blood plasma.

It plays crucial roles in various biological processes, including cell adhesion, migration, growth, and differentiation.

**Structure of Fibronectin:**

**Primary Structure:**

Fibronectin is composed of repeating structural motifs called modules or domains.

It is encoded by a gene located on human chromosome 2.

## Domain Structure:

Fibronectin contains multiple types of domains, including type I, type II, and type III repeats.

These repeats form distinct functional regions within the protein.

**Glycosylation:** Fibronectin undergoes post-translational modifications, including glycosylation, which affects its function and stability.

**Alternative Splicing:** Fibronectin can be alternatively spliced, resulting in different isoforms with distinct functions.

## Functions of Fibronectin:

**Cell Adhesion:** Fibronectin binds to cell surface receptors such as integrins, facilitating cell adhesion to the extracellular matrix.

**Extracellular Matrix Organization:** Fibronectin contributes to the structural organization of the extracellular matrix, providing support and anchorage for cells.

**Cell Signaling:** Fibronectin-mediated interactions with cell surface receptors trigger intracellular signaling pathways, regulating various cellular processes.

**Tissue Repair and Remodeling:** Fibronectin plays a crucial role in wound healing, tissue regeneration, and remodeling processes.

## Roles of Fibronectin in Health and Disease:

**Development and Morphogenesis:** Fibronectin is essential for embryonic development, including processes like gastrulation and tissue morphogenesis.

**Wound Healing:** Fibronectin facilitates the migration of cells to wound sites and promotes tissue repair by providing a scaffold for cell adhesion and proliferation.

**Cancer Progression and Metastasis:** Altered expression and function of fibronectin are associated with cancer progression, invasion, and metastasis.

**Fibrosis:** Fibronectin deposition contributes to the development of fibrosis in various organs, including the liver, lung, and kidney.

## Research Applications of Fibronectin:





**Cell Culture Substrate:** Fibronectin-coated surfaces are commonly used in cell culture experiments to promote cell adhesion and proliferation.

**Tissue Engineering:** Fibronectin-based biomaterials are utilized in tissue engineering applications to mimic the natural extracellular matrix and promote tissue regeneration.

**Drug Delivery:** Fibronectin-targeting ligands are investigated for their potential use in targeted drug delivery systems, particularly for cancer therapy.

**Disease Biomarker:** Altered levels of fibronectin expression or isoform distribution are explored as potential biomarkers for various diseases, including cancer and fibrosis