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Anthropology short notes

The biological basis of Life

UPSC Civil Services (Main) Examination · Anthropology GS 1 · Anthropology GS 1 (Paper I)

1.7 The biological basis of Life: The Cell, DNA structure and replication, Protein Synthesis, Gene, Mutation, Chromosomes, and Cell Division.

Short notes by official syllabus heading.

Revision notes for the Anthropology optional. Confirm thinkers and examples against standard texts and recent papers.

<https://wrapexams.com/upsc/mains-answers/anthropology-gs-1/the-biological-basis-of-life/>

The Biological Basis Of Life

Definition

Biological Factors Causing Subordination

Example / case study

Studies the biological evolution and variation of human beings. It examines humans as biological organisms.

The Cell

Definition

~70,000 years ago → Indian & African populations had a common ancestor (proved by mtDNA studies).

Thinkers

She did not get Nobel recognition → bias in science (WASP dominance: White Anglo-Saxon Protestant).

Dna Structure

Definition

Studies the biological evolution and variation of human beings.

Replication

Definition

A ↔ T (weak hydrogen bond, double bond).

Example / case study

Studies the biological evolution and variation of human beings. It examines humans as biological organisms.

Protein Synthesis**Definition**

~70,000 years ago → Indian & African populations had a common ancestor (proved by mtDNA studies).

Thinkers

She did not get Nobel recognition → bias in science (WASP dominance: White Anglo-Saxon Protestant).

Gene**Definition**

Studies the biological evolution and variation of human beings.

Example / case study

100 cases of cell division → 40 recombinant, 60 parent → $RF = 40 / 100 = 0.4$ (110)⁶ possible combinations - hence every human has a unique HLA type.

Mutation**Definition**

This is a phenomenon where the expression of a gene depends on which parent it was inherited from. Certain genes are "silenced" via DNA methylation during gamete formation.

Example / case study

Phenylketonuria (PKU). A mutation on Chromosome 12 leads to an inability to metabolize phenylalanine, which subsequently causes intellectual disability, skin pigmentation loss, and neurological issues. HLA (Human Leukocyte Antigen) genes. On Chromosome 6, genes A, B, and C are linked and almost always inherited as a single unit. Prader-Willi Syndrome occurs if a specific segment of Chromosome 15 is deleted from the paternal side, while Angelman Syndrome results if the same segment is deleted from the maternal side.

Thinkers

Marriage as Exchange: Lévi-Strauss used the Purum case to argue that kinship is fundamentally a system for the reciprocal exchange of women between groups, which acts as a form of social communication. Challenge to Descent Primacy: While British anthropologists like Radcliffe-Brown emphasized descent groups (lineages/clans) as the primary basis of social structure, the Purum system proved that marriage alliances are equally fundamental.

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