

**WRAP Exams · wrapexams.com**

Prelims PYQ, Mains model answers, and copy evaluation. Write to the desk for this paper, a doubt, or the AI waitlist.

**ask@wrapexams.com · +91 85951 84903 · wrapexams.com**

Q6(a)

## **What are genetic markers? Discuss their applications in understanding population variation, disease association and forensics**

UPSC Civil Services Mains 2025 · Anthropology GS 1 · 20 marks · Applications of Anthropology

12. Applications of Anthropology: Anthropology of sports, Nutritional anthropology, Anthropology in designing of defence and other equipments, Forensic Anthropology, Methods and principles of personal identification and reconstruction, Applied human genetics-Paternity diagnosis, genetic counselling and eugenics, DNA technology in diseases and medicine, serogenetics and cytogenetics in reproductive biology.

Facts & figures for this PYQ only.

Numbers move. Confirm the latest Budget, Economic Survey or census round. This sheet is for revision, not a substitute for the model answer.

<https://wrapexams.com/upsc/mains-answers/anthropology-gs-1/2025/what-are-genetic-markers-discuss-their-applications-in-understanding-population-variation-disease-association-and-forensics/>

### **ABO blood groups**

Classical serological markers described by Landsteiner. They remain a teaching example of Mendelian polymorphism used in population surveys.

### **Alec Jeffreys**

He developed DNA fingerprinting from hypervariable regions, which became the basis of forensic STR profiling.

### **Richard Lewontin**

He showed that most human genetic variation is found within populations rather than between continental groups.

### **Sickle-cell and malaria**

A. C. Allison's work linked the sickle-cell allele to malaria, a classic marker-disease-environment case in biological anthropology.

### **STRs**

Short tandem repeats used in forensic identification because they are highly variable among individuals.