



Genetic Markers and Preterm Birth

Why in News?

Recently, Indian scientists working in the [Garbh-Ini program](#) have identified **19 genetic markers associated with preterm birth**, a major cause of [Neonatal deaths](#) (deaths among live births during the first 28 completed days of life) and complications globally.

- The identification of **genetic markers associated with preterm birth** could help in **predicting high-risk pregnancies** and monitoring them closely, leading to improved **maternal and neonatal outcomes**.

What is Preterm Birth?

- **About:**
 - Preterm birth, also known as premature birth, refers to the **birth of a baby before the completion of 37 weeks of gestation**. There are sub-categories of preterm birth, based on gestational age:
 - **Extremely preterm (less than 28 weeks)**
 - **Very preterm (28 to 32 weeks)**
 - **Moderate to late preterm (32 to 37 weeks)**.
 - It is a **significant public health issue**, especially in **India and Southeast Asia**, and is associated with delayed mental and physical development in infants and increased risks of diseases in adulthood.
 - Globally, **one in every 10 births is preterm**.
 - Also, of all babies born annually in India, **about 13% are born preterm**. Globally, **India accounts for 23.4% of preterm births**.
- **Fatality:**
 - Preterm babies are **two to four times at higher risk of death** after birth in comparison to those born after 37 weeks of gestation.
 - When these babies become adults, they also become at higher risk of **diseases such as [Type-2 diabetes](#), [hypertension](#) and [cancer](#)**.

What are Genetic Markers?

- **About:**
 - Genetic markers, also known as **DNA markers or genetic variants**, are specific **sections of DNA that are associated with particular traits**, characteristics, or conditions.
 - Genetic markers can be **either DNA sequences or specific variations in the DNA sequence**, such as **single nucleotide polymorphisms (SNPs)**, which are the most common type of genetic marker.
- **Significance:**
 - They are **used in genetics research and clinical practice to identify and study genetic variations** that may be linked to **diseases, disorders, or other biological traits**.
 - These SNPs are known to regulate important **biological processes** such as **inflammation, apoptosis, cervical ripening, telomere maintenance,**

selenocysteine biosynthesis, myometrial contraction, and innate immunity.

Garbh-Ini

- **Garbh-Ini (Interdisciplinary Group for Advanced Research on Birth Outcomes—DBT India Initiative)** was initiated by the **Department of Biotechnology (DBT)**, in 2014 as a collaborative interdisciplinary program.
- This program is led by **Translational Health Science and Technology Institute (THSTI)**, NCR Biotech cluster, Faridabad.
- It aims to elucidate **biological and non-biological risks of preterm birth (PTB)** to create **important knowledge-driven interventions** and technologies that can be sustainably implemented in clinical practice and in the community for this disease.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Which of the following are the objectives of 'National Nutrition Mission'? (2017)

1. To create awareness relating to malnutrition among pregnant women and lactating mothers.
2. To reduce the incidence of anaemia among young children, adolescent girls and women.
3. To promote the consumption of millets, coarse cereals and unpolished rice.
4. To promote the consumption of poultry eggs.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 1, 2 and 3 only
- (c) 1, 2 and 4 only
- (d) 3 and 4 only

Ans: (a)

Source: IE

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