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PUBERTY

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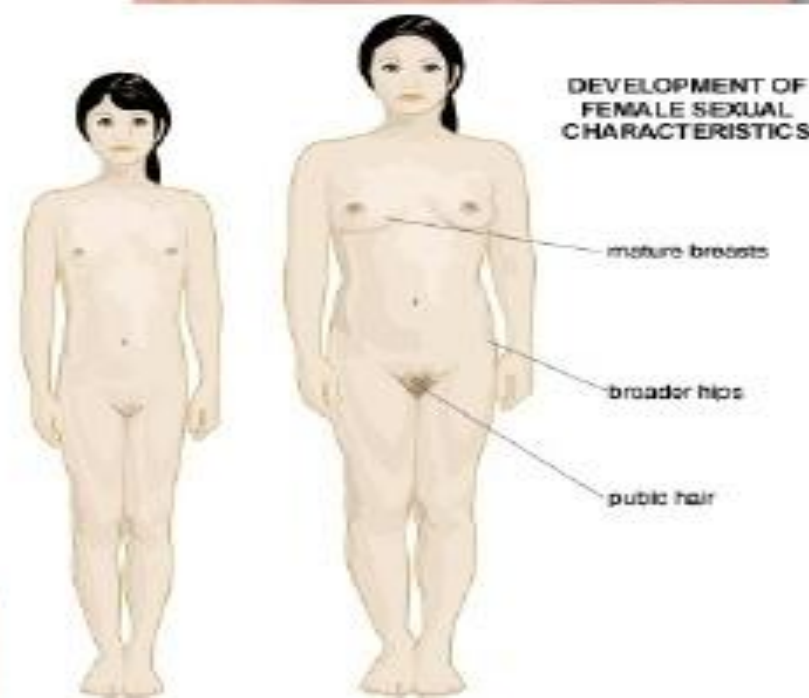
A spiral-bound notebook page with the word "PUBERTY" written in large, colorful, hand-drawn letters. The letters are: P (green), U (yellow), B (blue), E (yellow), R (pink), T (blue), Y (yellow). The word is surrounded by several exclamation marks and question marks drawn in black ink. A watermark "PPTOCK" is visible across the word. The notebook is on a dark wooden surface, and parts of orange, red, and green markers are visible around the edges.

Events of Puberty

- **Thelarche (breast development)**
 - Requires estrogen
- **Pubarche/adrenarche (pubic hair development)**
 - Requires androgens
- **Menarche (the first menses)**

Requires:

 - GnRH from the hypothalamus
 - FSH and LH from the pituitary
 - Estrogen and progesterone from the ovaries
 - Normal outflow tract



Normal developmental sequence

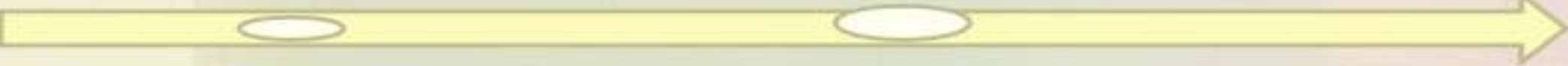


Thelarche
8-13 years

Pubarche

2-3 years later

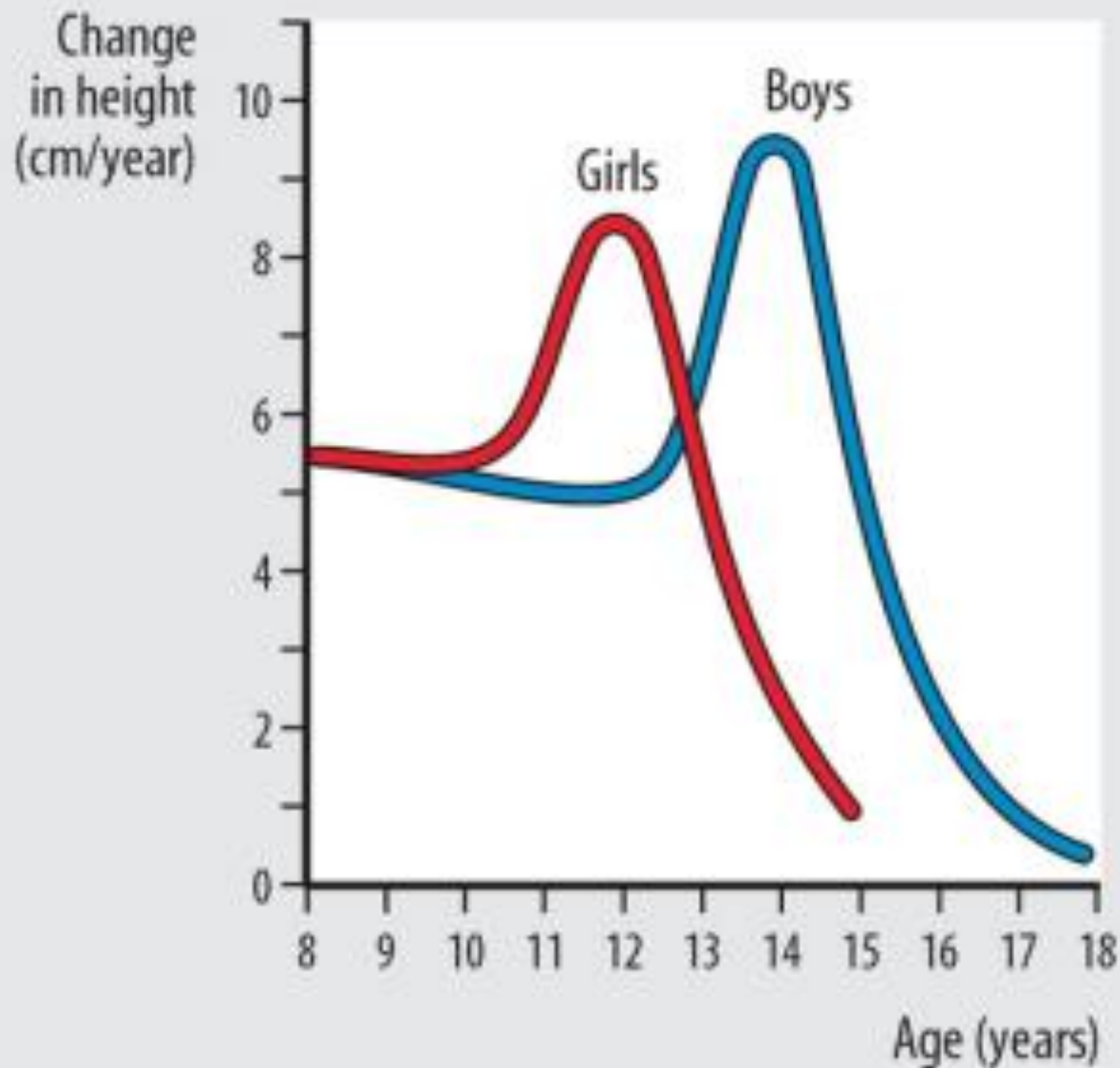
Menarche



**Enlargement
of testes**

Appearance of pubic hair

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Onset of puberty

1. Genetic factors
2. State of nutrition
3. Loose correlation between the onset of menarche in mother and daughter
4. Body composition and fat deposition
5. Geographic location and exposure to light

