CHAPTER 7-RESPIRATION (FORM 4)

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RESPIRATION

- Main substrate needed → glucose
- Divided into
  - 1. **External:**
    - -a mechanical process
    - -also known as breathing
    - -maintains a continuous exchange of CO_2 and O_2.
    - Divided into
      - **Inspiration / Inhalation**:
        - -O_2 taken in through mouth / nostrils
      - **Expiration / Exhalation**:
        - -CO_2 released through mouth / nostrils
  - 2. **Internal:**
    - -also called cellular respiration.
    - -a biochemical process.
    - -energy released from ATP.
    - Divided into
      - 2. **Aerobic respiration**:
        - -requires O_2.
        - -breakdown of glucose is complete.
        - -large amount of energy ↑.
        - -energy is used toform ATP.
        - -occur in mitochondria.
        - -CO_2 released as waste products.
      - 1. **Anaerobic respiration**:
        - -≠ require O_2.
        - -breakdown of glucose is not complete.
        - -less amount of energy↑.
        - -occur in cytoplasm.
        - -by products are:
        - i)lactic acid→ in animals.
        - ii)ethanol→ in yeasts & plants.
        - Occurs in
          - (b) **yeast / plants:**
            - -glucose is converted into ethanol + energy + CO_2. process is also called fermentation.
            - -ethanol is converted back to CO_2 and energy when O_2 is present.
          - (a) **Human muscle:**
            - -happens during vigorous exercise.
            - -lactic acid builds up in muscle → causes muscle fatigue.
            - -after exercise, deep and fast breathing occurs → to break down lactic acid.(in muscle and liver)
            - -amount of O_2 needed for the breakdown is called "Oxygen debt".
            - -lactic acid is broken down to form CO_2 and energy.
            - -energy from this process is less.
- Respiratory Structures Of Animals
  - Surface membrane ← Protozoa
  - Gills ← Fishes
  - Lungs ← Humans
  - Tracheal system ← Insects
  - Lungs, skin, mouth cavity ← Amphibians

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