Study of Homology and Analogy from Suitable Specimens

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Objective

To study homologous and analogous organs using photographic specimens.

Principle

In evolutionary biology, structures are classified as:

- **Homologous organs:** Organs that have similar anatomical structures and embryonic origins but perform different functions. These indicate divergent evolution from a common ancestor.
- **Analogous organs:** Organs that perform similar functions but differ in structure and origin. These are examples of convergent evolution.

This practical involves identifying examples of homology and analogy using two available photographic specimens.

Materials Required

- Photographic specimen 1: Forelimbs of frog, lizard, human, and bird
- Photographic specimen 2: Wings of insect and bird
- Observation sheet or notebook

Procedure

1. Observe the first photograph showing the forelimbs of frog, lizard, human, and bird.
2. Compare the skeletal structures to identify similarities and differences in bone arrangements.
3. Observe the second photograph showing the wings of insect and bird.
4. Examine the structural details and function of the wings in both.
5. Classify the examples into homologous or analogous categories.
6. Record observations in a table.

Observations:

Specimen Compared	Type	Similarities	Differences
Forelimbs of frog, lizard, human, and bird	Homologous	Similar bone pattern (humerus, radius, ulna etc.)	Different functions: jumping, walking, grasping, flying
Wings of insect and bird	Analogous	Both used for flying	Insects: membranous wings, exoskeleton; Birds: bony wings, feathers

Conclusion:

1. Forelimbs of frog, lizard, human, and bird are homologous organs. They share a common ancestral structure but have evolved to perform different functions.
2. Wings of insect and bird are analogous organs. Though used for flying, they differ in structure and origin, reflecting adaptation to a similar function through convergent evolution.