

# Laboratory Animals

## Laboratory Animals

### What are Laboratory Animals?

- Laboratory animals are animals such as rats, mice, rabbits, guinea pigs, and others used in scientific research.



- **They are essential for:**
  - Studying diseases
  - Testing drugs and vaccines
  - Understanding biological and behavioral processes
- These animals serve as models to predict human responses to treatments and diseases.

## Laboratory Animals: Study of CPCSEA guidelines for maintenance, breeding and conduct of experiments on laboratory animals

- **Full Form:** Committee for the Purpose of Control and Supervision of Experiments on Animals
- **Governing Body:** Ministry of Environment, Forest and Climate Change, Government of India

### Purpose of CPCSEA:

- To **regulate** and **monitor** how animals are used in scientific experiments.
- To **protect animal welfare** during research.
- To ensure that **scientific work does not cause unnecessary pain** or suffering to animals.

## Key Guidelines

### 1. Registration of Establishments

- All institutions intending to use animals must register with CPCSEA.

### 2. Institutional Animal Ethics Committee (IAEC)

- Every institution must establish an IAEC.
- The committee must review and approve all research protocols involving animals.
- IAEC enforces the 3Rs Principle:
  - **Replacement:** Use alternatives (e.g., cell cultures, computer models)
  - **Reduction:** Use the minimum number of animals
  - **Refinement:** Modify procedures to minimize suffering

### 3. Animal Housing and Facility Requirements

- Animals must be kept in clean, safe, species-appropriate cages.
- Conditions such as temperature, lighting, humidity, ventilation must be controlled.
- Regular cleaning, fresh food, and water are mandatory.

### 4. Breeding and Supply

- Only registered breeders may supply animals.
- Breeding must be done under humane and regulated conditions.

### 5. Veterinary Care

- Animals must be examined regularly by a qualified veterinarian.
- Sick or injured animals must be treated or euthanized if recovery isn't possible.

### 6. Conduct of Experiments

- Experiments should be carried out by trained personnel only.
- Use of anesthetics or pain relief is mandatory in painful procedures.
- Humane endpoints should be applied to avoid unnecessary pain or distress.

## Laboratory Animals: Study of OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals

- **Full Form:** Organisation for Economic Co-operation and Development

### Purpose of OECD Guidelines:

- To **standardize testing methods** across countries.
- To **ensure safety** and **ethical animal use** in drug testing.

- To help with **international acceptance** of test results (so one test is valid in many countries).

## Key Guidelines

### A. Harmonization and Standardization

- OECD guidelines are recognized internationally to standardize testing methods.
- Results from one country can be accepted globally, avoiding duplicate testing.

### B. Good Laboratory Practices (GLP)

- Emphasizes data integrity, accuracy, and reproducibility.
- Requires proper documentation, record-keeping, and trained staff.
- Ensures that experiments are conducted in a structured and reliable manner.

### C. Animal Welfare

- Aligns with CPCSEA in advocating humane treatment.
- Stresses minimal suffering and encourages the use of non-animal alternatives.

### D. Standardized Test Designs

- OECD provides protocols for:
  - Acute and chronic toxicity
  - Skin and eye irritation
  - Carcinogenicity
  - Reproductive toxicity
- These ensure that testing is scientifically valid and globally comparable.

## Common Laboratory Animals: Species, Strains, and Genetic Models

- Laboratory animals are selected for research based on factors such as **cost, size, breeding efficiency, genetic similarity to humans**, and the **availability of background data**.
- Each species and strain offers specific advantages for different types of scientific investigations.

## Commonly Used Laboratory Animal Species

| Animal                         | Key Traits                                                                  | Common Research Uses                                        |
|--------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>Mouse (Mus musculus)</b>    | Small, economical, short lifespan, easy to breed, well-mapped genome        | Cancer, genetic disorders, drug metabolism, immunology      |
| <b>Rat (Rattus norvegicus)</b> | Larger than mice, intelligent, suitable for surgical and behavioral studies | Cardiovascular research, neurology, endocrinology, toxicity |

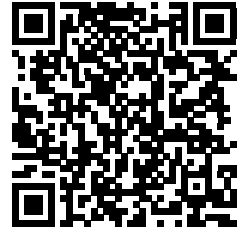


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