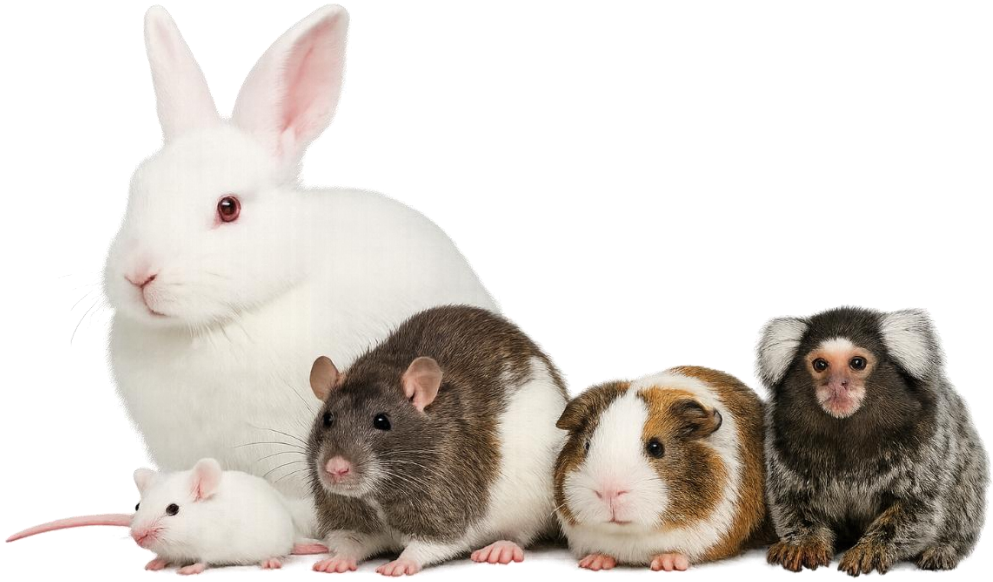
Laboratory Animals

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
Mouse (Mus musculus)	Small, economical, short lifespan, easy to breed, well-mapped genome	Cancer, genetic disorders, drug metabolism, immunology
Rat (Rattus norvegicus)	Larger than mice, intelligent, suitable for surgical and behavioral studies	Cardiovascular research, neurology, endocrinology, toxicity

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