

## practical pharmacology

### BACKGROUND INFORMATION:

**PHARMACOLOGY:** Is the branch of science which deals with study of drugs on living systems.

### **EXPERIMENTAL PHARMACOLOGY:**

deals with study of effect of various pharmacological agents on different animal species.

### **OBJECTIVES OF PHARMACOLOGY:**

- To find out the therapeutic agent suitable for human use.
- To study the toxicity of the drugs.
- To study the mechanism and site of action of drugs.

**LABORATORY ANIMALS:** Animals those can be bred and handled in laboratory.

Examples: **Rat, Mice, Guinea pig, Rabbits, Frogs, Cat, Dog, Monkey, etc.**

#### **1. RATS (*Rattus norvegicus*)**

Albino rats of Wistar strain are commonly use



#### **2. MICE (*Mus musculus*)**

- Swiss albino mice are commonly used species

#### **ADVANTAGES AND CHARACTERISTICS:**

- Smallest.
- Less drug required.
- Easy to handle.
- Cheap.



### 3. GUINEA PIGS ( *Cavia porcellus* )

#### ADVANTAGES AND CHARACTERISTICS:

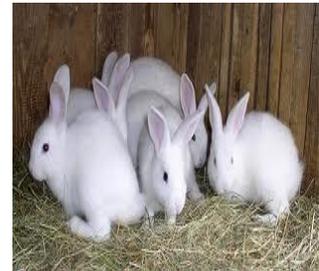
- Docile animals
- Highly susceptible to TB and anaphylaxis
- Highly sensitive to histamine, penicillin
- Required exogenous vitamin C in diet



### 4. RABBITS (*Lupas cuniculus*)

#### ADVANTAGES AND CHARACTERISTICS:

- Docile animal with large ears
- New Zealand white strains are widely used
- It has huge caceum and long appendix



▫ Enzyme atropine esterase is present in rabbit liver and plasma so it can tolerate large doses of belladonna (atropine).

### 5. FROGS (*Rana tigrina*)

#### ADVANTAGES AND CHARACTERISTICS:

- Used before 200 years
- Easily available during rainy season
- Amphibian animal and safe to handle
- Cannot breed in laboratory.



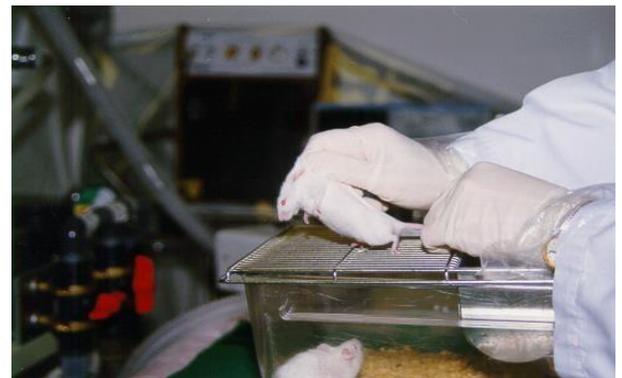
### Handling technique of laboratory animal (mouse) :

A. For Blood collection , from:

- tail vein.
- orbital sinus.
- cardiac puncture.

B. Determining Sex and Age.

C. Acclimation.



# ROUTES OF DRUG ADMINISTRATION TO LABORATORY ANIMALS



The possible routes of drug entry into the body may be divided into following classes:

## **I. ENTERAL ROUTE**

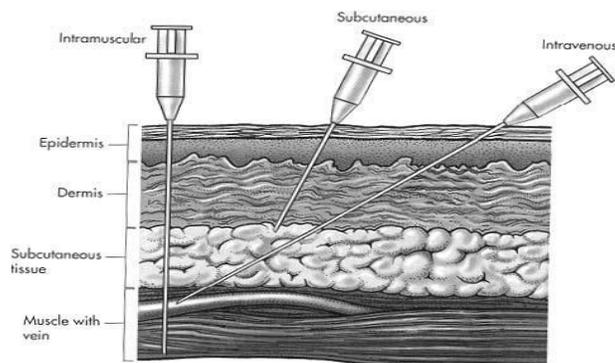
1. Sublingual: under the tongue
2. Oral administration (P.O.)
3. Rectal or vaginal

## **II. PARENTERAL ROUTE:** administration of medications by needle

- |                                  |         |
|----------------------------------|---------|
| 1. Intravenous (I.V.): into vein | Fastest |
| 2. Subcutaneous (S.C.):          | Slowest |
| 3. Intramuscular (I.M.)          | Medium  |

## **III. PULMONARY ROUTES:** Inhalation into lungs

## **IV. TOPICAL.**



## ► Acclimation:

\_This period of time allows animals to adapt to a new environment. Upon arrival to your facility, your mice should have an acclimation period before they are used.

\_The period of time necessary for biological stabilization will depend on the parameters to be studied.

## ► Determining Sex and Age:

- (Refer to the image) the top two mice are neonates and note that the anogenital distance is larger in the male than in the female neonates, the penis and vulva cannot be easily differentiated and so are referred to as a genital papilla.
- The bottom two animals are adults; genitalia are differentiated. Also, nipples become evident in females at about 10 days of age.

