

**Laboratory Animals:**

- 1- Mice : used for
  - Infectious Agents.
  - Graft Tissue Reaction.
- 2- Rats : used for Organs Transplantation.
- 3- Rabbits : used for Source of large amount of Antiserum.
- 4- Guinea Pigs : used for Hypersensitivity experiments.
- 5- Hamster : used for :
  - Hypersensitivity experiments.
  - Infectious Agents ( specially parasites).
- 6- Chickens. Produce some vaccines.

**Laboratory Animals Breeding:**

By using cages according to animal type, by which the small cages for the small animals with supplying good sources of food, water, air, proper temperature and light with the consideration of not gathering different animals in the same cage because some of them may eat the other ( ex. Rat eat Mouse ), and usually for animals breeding we put **1 - 2** male to **2** female.

Mice are the most common animals used in immunological laboratory experiments for the following reasons:-

- 1-** Having multilabour births with short pregnancy period ( approximately 3 weeks ).
- 2-** Their small size ( we can put many of them in one cage ).
- 3-** Need relatively small amounts of food and water.
- 4-** Easy controlling of them ( handling and injecting ) while rats ( because of their large size ) difficult to control them by one person.
- 5-** Need relatively small amount of materials used in the experiments like injected materials ( because mouse weight is light ).

- 6- There is similarity in the genetic material between mice and human (about 90% in some genetic loci so), mice used commonly in immunological and drugs experiments.

**Animals Labeling : by using:-**

- 1- Stains.
- 2- Insoluble water markers.
- 3- Ear piercing.

Also we write the following on the animal cage :

- 1- Date of injection.
- 2- Type of injection.
- 3- Amount of injection.

**Routes of Injection:**

- 1- Intravenous route (I.V.)

Used with some animals like Rabbits and Guinea pigs by which we inject in the external marginal ear vein, while in Mice and Rats we inject in the tail vain.

We use intravenous injection for fast immunological response against the antigen (**Ag**) without mixing any immunological boosters.

- 2- Intraperitoneal Route (I.P.)

We inject inside the peritoneum between muscles and viscera (intestine) by which the injected material will leak with the abdominal fluid into the nearest lymph node.

- 3- Intramuscular Route (I.M.). We inject in thigh lymph nodes

- 4- Subcutaneous Route (S.C.)

We inject between skin and muscles by which the injected material will leak into nearest lymph node.

**5- Intradermal Route (I.D.)**

We inject inside dermis by which the injected material will leak from skin into lymph or stay in skin (ex. We inject in the foot pad of mice).

**Bleeding Routs :**

- 1- Venous puncture : used for example in sheep by collecting 10-15 cc of blood.
- 2- Tail vein : used for example in mice and rats by cutting the most terminal part of the tail and collecting 1-2 cc of blood.
- 3- External marginal ear vein : used for example in rabbits.
- 4- Ophthalmic venous plexus : bleeding done in the area between eyes.
- 5- Cardiac puncture : used for any laboratory animal.

**Points must be considered in immunization:-**

- 1- Laboratory animal type and size.
- 2- The used syringes and materials must be sterilized.
- 3- The size of syringe needle and its tip must be straight, point and sharp.

**Immunogen types :**

- 1- Particle : ex. Bacterial cell, yeast, RBC.
- 2- Soluble : ex. Serum, polysaccharide, Lipopolysaccharides (LPS).