

# Immunology

## Practical Immunology

### Lecture 1

### Blood collection and immune parameters

Tikrit University

College of Veterinary Medicine

Department of Microbiology

By

Muthanna Sultan  
Aghareed Ali Hussein  
Mariam Ahmad Zaydan



## Collection of Blood Samples for further detection of Immunological parameters

The purpose of blood collection is to Provide safe blood collections volumes which depends on:

A-Species of the animal

B-Frequency of collection

All the procedures of the animal collection must be approved by the Institutional Animal Care and Use Committee (IACCUC).

The researchers and/or veternerian should consider the stress associated during the collections of samples and they should try to minimize that as much as they can

## Volume of collected blood samples

There are important factors that should be considered for collection of animals including :

- Healthy status of the animal: if the animal is sick and suffering then we should exclude that from the collection because it may not be able to tolerate the volume of blood collection
- Minimize the stress as much as we can.
- Make sure that the animal gets enough time of rest before exposed to further experimental procedures.(e.g.: The animal should gets enough time of rest after collection of blood before exposed to such a measuring such as of respiratory parameters or exposed to other experimental compounds .
- In general, the total circulated blood is 5 -8 % of the animal's weight while the volume of blood collected is 10 % of total blood volume once every couple weeks.

## Site (origin) of collection

The site of blood collection depends on the type of animal which giving a compatibility with the size and status of each type of animal.

Mouse and rat : Retro-orbital orifice , tail vein and cardiac

Equine: Jugular vein

Rabbit: Marginal ear vein, Cardiac

Dog and cat: Femoral vein, Jugular vein, Cephalic.



Retro-orbital orifice(eye)-Collection of blood –Preferred in mice (required anesthesia)

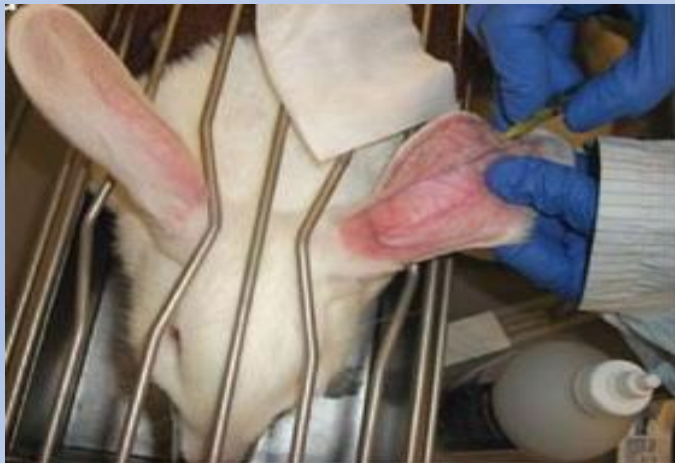


Tail vein-Collection of blood – Preferred in rats

**Dr. Muthanna A. Sultan**  
**Biomedical sciences-Immunology & Microbiology**



**Jugular vein**



**Ear vein-Rabbit**

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Biomedical sciences-Immunology & Microbiology

Cephalic vein-Dog



Wing vein-Chicken

# What immune parameters that we can detect in the blood ?

A- Detection of immune markers in Whole blood

B- Detection of immune markers in serum



## A- Detection of immune markers in Whole blood including:

- Complete blood count to determine the total white cells, total lymphocytes and total eosinophiles

## A- Detection of immune markers in serum- including:

A- Detection of immune markers in whole blood

1- C-Reactive protein-CRP: an indicator of tissue damage

2- Immunoglobulins (Antibody) : a glycoprotein that are playing an important role in maintaining the immune system

3- Antinuclear antibody

4- Total protein