

General Virology

Practical work

Practical work will complement some of the subjects learned in the classes. Besides the mere learning of how to work in a virology laboratory, experimental design, the experimental results and their interpretation will be discussed to promote the understanding of the whole practical content. The practical main aims are to engage the students with the main of virus detection, diagnosis and laboratory methods that are used in a wide range of microbiology and biomedical research settings. The practicals are also designed to offer an alternative learning situation for the ideas that underlie both the virus detection and the techniques.

In the laboratory classes, students will:

- Develop hands-on training experience on methods and techniques used in virology.
- Isolate and purify a virus, determine its growth characteristics and host range, and identify it.
- Observe and determine pathological changes occur during virus infection and replication (cytopathic effects).
- Perform cell culture techniques.
- Acquire hands-on training experience on virus identification and diagnostics
- Acquire hands-on training experience on virus isolation methods.
- Identify of unknown virus using basic virology and molecular biology techniques

Laboratory practical exam:

The preparedness and activity at the laboratory practicals is checked by a 20 question (MCQ/SAQ) exam at the end of the laboratory practical. Questions are based on the plenary practical notes, laboratory practical handout and the information discussed during the laboratory practical

Practical classes

Required Materials:

Lab Manual: Virology Laboratory Manual- Lab Notebook

Weeks	Class topic
1	Laboratory detection of virus (collection and transport of samples).
2+3	Basic cell culture techniques and virus cultivation in cell culture
4+5	Direct demonstration of virus infections I (virus isolation and identification).

6+7	Direct demonstration of virus infections II (detection of viral antigens and viral nucleic acid).
8	Virus-induced cytopathic effects
9	Titration of viruses
10	Direct detection of viral infections using molecular methods I. (virus nucleic acid purification)
11	Direct detection of viral infections using molecular methods II. (polymerase chain reaction)
12	Direct detection of viral infections using molecular methods II. (agarose gel electrophoresis)
13+14	Virus isolation from diagnostic samples (inoculation of embryonated eggs)

Good laboratory practices and Laboratory safety procedures and precautions

1. Each student should wear laboratory coat and appropriate personal protective equipment.
2. Do not perform activities in the lab until you are given instructions by your laboratory instruction.
3. Read all precautions in the laboratory manual and on labels and follow directions exactly.
4. No eating or drinking in the laboratory.
5. Always double-check the name of the reagent to be used and the name of the reagent you are using.
6. If you are in doubt as to the correct procedure, double-check the protocol. If doubt continues, consult your instructor. Avoid asking your neighbor for procedural help.
7. Do not pour reagents, chemicals and biological fluids down the sink. Dispose of these only in designated containers.
8. Never pipette by mouth.
9. Do not place contaminated pipettes and loops, or other contaminated tools on the bench top
10. Know the locations and operating procedures of all safety equipment such as first aid kits, and fire extinguisher.
11. **Never remove specimens, cell cultures, or equipment from the laboratory under any circumstances!!!**
12. In case of biological spill or any type of accident occurs, call the instructor immediately
 - ✓ place a paper towel over any spill and pour disinfectant over the towel
 - ✓ let the disinfectant stand for 15 minutes, then clean the spill with fresh paper towels.
13. After performing an experiment, and before leaving the laboratory, you should always wash your hands with soap and water.
14. **Don't Experiment on Yourself**