

Summaries for virology lecture 4 :

Type of diagnosis :	Microscopy	Demonstration of Viral Antigens	Serologica Reactions (anti-viral antibodies)	Molecular Techniques	Viral Isolation and Culture
Simplified mechanism	Search for the virus under the microscope	Search for the viral antigen	We use the immune reactions and the antibodies produced as a mirror for the virus	Search for the virus through nucleic acid amplification via (PCR)	Culture the virus at specific media and look for it
Extra info	-	-	We take 2 samples (1- at the earliest , 2- after two weeks) for IgM	RNA viruses undergo initial reverse transcription to become DNA - it is very sensitive (able to detect small amount) which is great - Knowing the specific sequence of the target primer + nucleic acid type →identification of the virus	Purposes : 1) isolate and identify viruses 2) Prepare vaccines 3) detailed research on viral structure
Disadvantages	1)too expensive for EM 2) most viruses don't appear under LM	1) Specificity among huge number 2) Require the differentiation between the self and the foreign antigen	1)Immune compromised patient produce false results 2) takes too much time 3) not 100% specific . (overlap could happen)	1)Very expensive 2)Technical demanding(very specific): any error can lead to false result	1) Dangerous 2) Demanding and not easy to make
Types :	EM LM, Fluorescent Microscope	1)Precipitation on gel 2)Immunofluorescence 3) (ELISA)	1)ELISA 2)Hemagglutination Inhibition (HAI)Test	-	1) Using Live Animal Inoculation 2) Using Bird Embryos 3) Cell culture for viral identification

Reaction to physical and chemical agents	Stabilized/ preserved at :	Destroyed by :
1) Temperature	subfreezing temperatures	heating at 50–60°C
2) Salts	stabilize viruses in order to resist heat	
3) pH	5–9 , some can resist acidic conditions also	alkaline conditions. (all)
4) Radiation	-	1)Ultraviolet 2) x-ray, 3) high-energy particles
5) Detergents	-	Through solubilization of lipid structure and disruption of capsids
6) Formaldehyde	-	Through reacting with nucleic acid
7) Quaternary ammonium, organic iodine, low-concentration chlorine, and Alcohols:	-	not effective against viruses as against bacteria

Mind map summaries:

