

University of Jordan
Dept. of Biol. Sci.
First Semester 2008/2009

Medical Virology Course (0304446)
Credit value: 2

Contact Time: Two 50 minutes lectures.

Knowledge and understanding

This course is designed for the medical laboratory students. Its primary object is to provide students with just enough basic virology which includes: virus structure, genome organization, replication and gene expression strategies of different viruses. This background allows them to deal with specific groups of human viruses, clinical and pathological aspects of viral infections in addition to understand the inhibitory action of the antiviral chemotherapy. Some virus assay techniques will be described in this course.

Students will be required to read selected chapters (assignment) from the references, and an original scientific papers from the recent literature (published in 2004-2006). This will allow them to familiarize themselves with the newly discovered viruses and the way which research in virology leads to the accumulation of new knowledge about viruses.

Cognitive/Intellectual analysis

Upon completion of this course, students should be:

1. able to differentiate human RNA viruses from DNA viruses with respect to structure, replication and gene expression strategies.
2. able to apply all of the above knowledge to some questions of current interest in the field of virology e.g. vaccination, antiviral drugs,-----etc.
3. familiar with detection, isolation and identification of different human viruses.
4. able to deduce the consequences of infection with human viruses.

Subject-Specific and Practical Skills

Although the course is taught without a practical part, the commonly used virology techniques will be described: cell culture technique, detection, isolation and identification of different human viruses.

Course Outline

Lecture No.	Topics	Chapter No.	Pages
A. General Virology			
1-3	General properties of viruses Architecture of viruses: Basic components of viruses, virus symmetry, virus genomes, classification of viruses, nomenclature of viruses, the range of diseases caused by viruses.	2	2-17
4-6	Viral replication and genetics The molecular biology of mammalian cells, Virus infection and replication in a host cell: General plan of viral replication, recognition of a target host cell, Internalization of the virus, formation of viral mRNAs, Replication of viral genomes, control of viral replication, Synthesis of viral proteins, post-translational modification of viral proteins, release of virus from the host cell and virus maturation, genetic variation of viruses	3	19-28
7	Propagation of viruses in the laboratory Virus isolation in cell culture Cytopathic effects	4 36	31 264-265
B. Specific Viral Infections			
8-11	Herpesviruses: General properties, types of infection, clinical features of infections, immune response to infection, diseases, treatment, laboratory diagnosis, classification: alphaherpesviruses: herpes simplex and varicella betaherpesviruses: cytomegalovirus gammaherpesviruses: Epstein-Barr virus	17 18 19 20	137-139 141-148 149-151 153-157
12-16	Hepatitis viruses Properties, clinical features, pathogenesis, immune response, mode of transmission, treatment, control, laboratory diagnosis, classification: the bloodborne hepatitis viruses B and delta. the enteric hepatitis viruses A and E. the bloodborne hepatitis flaviviruses	21 22 23 24	159-160 161-170 171-173 175-178
17-18	Retroviruses HIV: morphology, genome, properties, mode of transmission, clinical features, stages of AIDS, diagnosis, prevention & treatment.	25	179-188

19-22 Respiratory viruses	8	72-77
Virion structure, properties, transmission, clinical and pathological aspects, prevention, control & laboratory diagnosis, classification: coronaviruses, rhinoviruses, parainfluenza viruses, respiratory syncytial virus, influenza,	9 10	79-81, 83-84, 85 87-95
23-25 Measles, Mumps and Rubella	9	81-85, 84-85
Properties of viruses, transmission, congenital infection, reinfection, immune response, diagnosis, prevention & control.	12 31	103-106 231-233
26 Gastroenteritis viruses	11	97-102
Properties of viruses, clinical and pathological aspects, diagnosis and control. Rotavirus, adenoviruses, caliciviruses, astroviruses.		
27 Picornaviruses	16	127-136
Poliovirus Properties, clinical and pathological aspects, control measures.		
28 Prions and spongiform encephalopathies	29	215-220

C. Assignment

How viruses cause disease	4	29-38
Resistance to infection	5	39-49
The laboratory diagnosis of viral infections	36	259-267
Antiviral chemotherapy	38	277-284
Human herpesvirus types 6 and 7	19	151-152
Kaposi's sarcoma-associated herpesvirus (HHV-8)	20	156
HTLV	25	187-188
Rabies	26	189-194
SARS	8	74-76
Papilloma virus	15	119-124

Scientific Papers and Reviews about some new emerging viruses which are not included in the text book e.g. Hepatitis G virus,ect.

Text Book

Collier L. & Oxford J. (2006). Human Virology. Third Edition. Oxford University Press, U.K.

References:

1. Zuckerman, A.J., Banatvala, J.E. and Pattison, J.R. (1994). Principles and Practice of Clinical Virology. John Wiley & Sons, New York.
2. Fields, B.N., Knipe, D.M., Chanock, R.M., Hirsch, M.S., Melnick, J.L., Monath, T.P. and Roizman, B. (1996). Virology. Vol. 1&2. 3rdEd. Raven Press, New York.
3. Galasso, G.J. (1993). Practical Diagnosis of Viral Infections. Raven Press, New York.
4. Journals:

Journal of Medical Virology	Journal of Clinical Virology
Journal of Virology	Journal of General Virology

Assesment

Mid-term Exam (12/11/2008)	30 %
Assignment (31/12/2008)	20 %
Final Exam	50 %