Animal Viruses

Multiplication of Animal viruses

- Attachment:
- Penetration by endocytosis (receptor mediated or pinocytosis) or fusion (
- Uncoating by viral or host enzymes.
- Biosynthesis: Production of nucleic acid and proteins.
- Maturation:
- Release by budding (______) or rupture.

Attachment, Penetration, and Uncoating

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Cancer

- Activated oncogenes transform normal cells into cancerous cells.
- Transformed cells have increased growth, loss of contact inhibition, tumor specific transplant and T antigens.
- The genetic material of oncogenic viruses becomes integrated into the host cell's DNA.

Oncogenic Viruses

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- Adenoviridae
- Herpesviridae
- Poxviridae
- Papovaviridae
- Hepadnaviridae

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- Retroviridae
 - Viral RNA is transcribed to DNA which can integrate into host DNA
 - HTLV 1
 - HTLV 2
- Latent Viral Infections
 - Virus remains in asymptomatic host cell for long periods

Persistent Viral Infections

- Disease process occurs over a long period, generally fatal
 - Subacute sclerosing panencephalitis ()

Virus Families

can be ssRNA, dsRNA, ssDNA, dsDNA

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Adenoviridae

- Mastadenovirus
 - Respiratory infections in humans
 - Tumors in animals

Papovaviridae

• Papillomavirus (

Orthopoxvirus	Pox	viridae
Molluscipoxyfurus	•	
- Smallpox, molluscum contagiosum, cowpox Herpesviridae - Simplexvirus (HHV 3) Lymphocryptovirus (HHV 4, EBV) Cytomeaalovirus (HHV 5) - Roseolovirus (HHV 6) - HHV 7 - Kaposi's sarcoma (HHV 8) - Some herpesviruses can remain latent in host cells Latent Viruses - Herpesvirus varicella-zoster = chickenpox during initial infection but later in life can reactivate as shingles - herpes simplex virus (HSV) 1 () and HSV 2 (both recur - HSV infects and destroys () oral and genital mucosa cells () but lies domant () in local nerve cells - recurrence may be stimulated by stress, sunburn, colds, fevers, menstruation, recurrences decrease in frequency over time; sometimes ceasing altogether; depends on immune system's ability to control virus - Virus actively shed from lesions during outbreak but lesions need not be present for virus to be shed! - an estimated 45+ million Americans are infected w/ genital herpes Hepnaviridae - Hepadinavirus () causes gastroenteritis Flloviridae - Arboviruses can replicate in arthropods; include yellow fever, dengue, SLE, and West Nile viruses - Eloola and Marburg viruses Orthomyxoviridae - Influenza C virus - Influenza C virus	•	
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	•	with MINI

Retroviridae

- Lentivirus (_____)
- Oncogenic viruses
 - Use reverse transcriptase to produce DNA from viral genome
 - Includes all RNA tumor viruses

Control / Treatment

- immune system can destroy viruses by phagocytosis, antibodies, or by destroying virally infected cells
- vaccines using virus "parts", whole inactivated viruses, or live weakened viruses can result in protective antibodies
- antiviral drugs (________) they can be used to help prevent infections, reduce duration of infections or outbreaks, prevent formation of new virions

Study Objectives

- 1. Compare and contrast animal virus replication with bacterial virus replication. How are they similar and different?
- 2. What is the relationship between cancer, oncogenes and oncogenic viruses? Give three examples of ongenic viruses.
- 3. Compare and contrast latent viral infections with persistent viral infections. How does each of these resemble bacteriophage lysogeny?
- 4. List the 8 herpes viruses and describe the diseases they cause, if known.
- 5. Describe the latent infections of varicella-zoster virus, HSV 1 and HSV 2.
- 6. List the name, family, disease (specific or general) of the <u>underlined viruses</u> listed in the notes.
- 7. Discuss how viruses can be controlled and treated.