HERPESVIRUSES

1. Which is the greek word that herpesviruses derived their name from?
2. What does latency mean?
3. What does persistence mean?
4. What are primary and secondary infections by herpesviruses?
5. What happens during the process of herpesvirus reactivation?
6. Which are the major subfamilies of herpesviruses on the basis of their biological properties?
7. Is EBV an alpha, beta or gamma herpesvirus?
8. Is chickenpox caused by herpesviruses or coronaviruses?
9. Is roseola caused by a herpesvirus or measles?
10. Name some alphaherpesviruses of animals other than herpes
11. How are herpes simplex 1 and simplex 2 related to each other?
12. Do herpesviruses spread by aerosol just like flu viruses?
13. Which herpesvirus caused genital herpes?
14. Where does VZV establish latency in human patients?
15. Which are the basic features of all herpesvirions?
16. Why is the tegument component of HSV virions important to initiation of infection?
17. Does herpes simplex enter into cells via phagocytosis or membrane fusion
18. Which are the major cellular receptors of herpes simplex?
19. Which are the major viral glycoproteins that mediate virus-cell fusion?
20. How do immediate early genes of herpes simplex turn on their transcription?
21. Does herpes simplex virus codes for its own DNA polymerase or does it use the cellular DNA polymerase I?
22. Where within the cell is the viral genome encapsidated within capsids and what is “head full” encapsidation means?
23. What is the statement “herpesvirus gene expression is sequentially ordered and coordinately regulated” is referring to?
24. Which are the most important immediate early (regulatory) genes of herpes simplex virus? Alpha 4, 0, 22, 27, 47
25. What is the principal function of the herpes simplex aTIF protein?
26. Which are the five immediate early genes of herpes simplex virus?
27. What kind of proteins do the early genes of herpes simples code for?
28. What kind of proteins do the late genes of herpes simplex code for?
29. Which is the only vaccine currently licensed for a herpesvirus?
30. How does acyclovir (Zovirax) work to stop herpes viral replication?
31. Do herpes viruses cause ocular disease?
32. Do herpes viruses cause encephalitis?
33. Why monkey B virus is lethal to humans but benign for monkeys?
34. Which is the major origin of EBV viral replication during latency?
35. Which viral protein is required for viral DNA replication during latency?
36. Which is the most important trans-acting factor protein that is responsible for switching the transcriptional program of EBV from latency to lytic cycle?

37. Which are some of the diseases associated with EBV infections?
38. What is the current theory of why EBV could cause Burkitt's lymphoma epidemics in Africa.
39. What is the basic principle of representational difference analysis (RDA) and how was it applied to discover the new herpesvirus, KSHV or HHV-8?
40. Is KSHV widespread among the human population just like EBV?
41. Why is KSHV referred to as one of the primary examples of piracy?
43. Which are some of the KSHV genes, which may contribute to Kaposi's sarcoma?
44. Which are some of the diseases associated with KSHV infections?

Poxviruses

1. Which is the most feared disease caused by poxviruses?
2. How long does it take to develop smallpox disease after infection?
3. Which are the two major subfamilies of poxviruses?
4. Is the poxviruses large enough to be visualized by a light microscope?
5. What is the structure of the poxvirus genome?
6. How does the poxvirus genome initiate replication from a double stranded genome covalently closed at both ends?
7. Where does the poxvirus lifecycle occur within cells?
8. Which is the most probable receptor for vaccinia virus?
9. Is gene expression of poxivus carried out by cellular or strictly viral enzymes?
10. Where does assembly of poxviruses occur within cells?
11. What is the the term " comet tail' refers to?
12. How does poxvirus evade the host immune system?
13. Is variola a lethal or benign poxvirus?
14. I vaccinia a lethal or benign poxivurs?
15. Which are the main reasons why eradication of smallpox was possible?
16. Why is smallpox considered a potent bioterrorism weapon?
17. Are there any vaccines against smallpox?
18. Is naked poxvirus DNA infectious after deposition within cells?
19. What is "variolation" referring to?
20. Which are some of the problems associated with using vaccinia as a vaccine against smallpox?

Viral Oncogenesis

1. Define the term cell cycle
2. Does DNA synthesis occur throught the cell cycle?
3. What is the role of cyclins in the regulation of cell cycle?
4. Which are the major check points in the cell cycle?
5. Is cancer a genetic or non-genetic disease?
6. Can chemical and radiation cause cancer?
7. Is cancer the result of a single mutagenic hit or multiple hits?
8. Define the term viral transformation
9. Define the term oncogene
10. Which are the DNA virus families that are associated with cancer induction?
11. What is the role of the pRb and p53 proteins in cell cycle regulation?

12. How does p53 block cell cycle progression?
13. Why patients that have both of their pRb genes mutated develop retinoblastoma?
14. Why is p53 protein levels elevated in cells exposed to high radiation?
15. How do DNA viruses inactivate the tumor suppressor proteins pRb and p53.
16. Which proteins of papova, adenovirus and papilloma virus bind and inactivate pRb and p53?
17. Do DNA viruses integrate into cellular genomes under certain conditions?
18. Which are the conditions that favor integration of DNA viral genomes into cellular chromosomes?
19. Which is the subfamily of retroviruses that cause cancer?
20. What are protooncogenes?
21. How are retroviral oncogenes (v-oncs) relate to protooncogenes?
22. What kind of proteins are v-oncs? T

Gene Therapy

1. Which viral vector systems can be used to permanently transduce a gene into cellular chromosomes?
2. What kind of retrovirus can be used to permanently tranduce a gene of interest into dividing cells?
3. What is ex vivo versus in vivo gene therapy?
4. What is the term “gutless” virus vector refers to?
5. Which are the viral vectors, which have the greatest capacity for transferring multiple genes at the same time?
6. What is the main safety issue with the use of retroviral vectors in gene therapy?
7. What is the term “shuttle” vector refers to?
8. Can adeno-associated virus be used for permanent transduction of a gene of interest into eukaryotic chromosomes?
9. What is a replication competent versus a replication incompetent virus?
10. How can you propagate a replication incompetent virus for gene therapy purposes?
11. What kind of promoters one can use to drive expression of a gene of interest inserted into a poxvirus genome?
12. Can a virus be produced that selectively replicates and kills cancer cells?
13. Colon cancer has mutations in the p53 gene. How can treat colon cancer with a virus vector that ameliorates the p53 defect.?
14. What kind of viruses you can use to transfer a gene of interest to central nervous system?
15. Can a biotech engineer construct hybrid viruses that can be used for gene therapy?
16. Which do you think is the best viral vector for gene therapy purposes?

Assigned Research Paper:

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Potent Systemic Antitumor Activity from an Oncolytic Herpes Simplex Virus of Syncytial Phenotype

Xinping Fu and Xiaoliu Zhang[1]

1. Explain the term viral oncolytic therapy
2. What are the two genetic approaches that been used to construct herpes simplex virus type-1 (HSV-1) oncolytic forms?
3. What are the major limitations of current HSV-1 oncolytic forms?
4. What are the major characteristics of the Fu-10 oncolytic virus?
5. What is the main idea in Fig. 1, 2, 3, 4. 5, 6, 7, and 8. Be prepared to answer basic questions about each figure.