

Course No: BIPH 2315  
 Course Title: Pharm. Biotech.  
 Date: 28/05/2018  
 No. of Questions: (4)  
 Time: 2 hours  
 Using Calculator (No)

University of Palestine



Final Exam For 2<sup>nd</sup>  
 Semester.  
 2017/2018  
 Total Grade:

Instructor Name: Dr. Iyad ALQOUQA  
 Student No.: \_\_\_\_\_  
 Student Name: \_\_\_\_\_  
 College Name: Pharmacy/Biotech.  
 Dep. / Specialist: \_\_\_\_\_  
 Using Dictionary (No)

**Question One:****40 Marks****Choose the correct one and encircle it**

<p>1. Which process is used to insert normal genes into human cells to correct disorders?</p> <p>A. Gene therapy          B. Live vector vaccines          C. Molecular cloning          D. Stem cell therapy</p>	<p>2. Most current gene therapy clinical trials target</p> <p>A. SCID deficiency          B. HIV          C. Cystic fibrosis          D. Cancer</p>
<p>3. Germ-line therapy is:</p> <p>A. Heritable          B. Not heritable          C. Sometimes heritable          D. Unrelated to heritability</p>	<p>4. Which gene transfer technique involves the use of a fatty vesicle to carry a gene into a somatic cell?</p> <p>A. Electroporation          B. Liposome transfer          C. Microinjection          D. Particle bombardment</p>
<p>5. The first disorder treated with gene therapy was deficiency in ____ gene.</p> <p>A. DMD          B. OTC          C. ADA          D. HH</p>	<p>6. A nasal spray containing adenovirus carrying a functional human CFTR gene is used to treat cystic fibrosis. This is an example of ____ gene therapy.</p> <p>A. In situ          B. In vivo          C. Ex vivo          D. Vaccine</p>
<p>7. Gene therapy targets</p> <p>A. Genotypes          B. Phenotypes          C. Either A or B depending on the application          D. Both genotypes and phenotypes</p>	<p>8. Which of the following is an example of a condition caused by a mutation in a single gene?</p> <p>A. Colon cancer          B. Cystic fibrosis          C. Heart disease          D. AIDS</p>
<p>9. The first gene therapy used cells altered outside the recipient's body and is called ____ gene therapy.</p> <p>A. Ex vivo          B. In vivo          C. In situ          D. Vaccine</p>	<p>10. Which cell type would not be a direct target for gene therapy?</p> <p>A. Muscle          B. Liver          C. Endothelium          D. Red blood</p>

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<p><b>11.</b> What is in general not a risk factor in gene therapy using adenoviruses?</p> <p>A. Insertional mutagenesis        B. Overexpression leading to an immune reaction.        C. Transient expression        D. Low pathogenicity</p>	<p><b>12.</b> Which of the following regarding adenoviruses is FALSE?</p> <p>A. Viral nucleic acid is dsDNA        B. Adenovirus is non-enveloped        C. Adenovirus can only infect dividing cells        D. Adenovirus lyses infected cells</p>
<p><b>13.</b> Which of the following is not a researched means of delivering therapeutic DNA for gene therapy?</p> <p>A. Polymers        B. Liposomes        C. Bacteria        D. Viruses</p>	<p><b>14.</b> A common technique for ensuring safety in viral vectors used in gene therapy is:</p> <p>A. Formalin inactivation of recombinant virus particles.        B. Prior immunization of the patient with the vector virus.        C. Administration of antiviral agents during treatment.        D. Inactivation of viral genes critical for replication.</p>
<p><b>15.</b> When glucose and lactose are both available in the growth medium of a culture of E. coli,</p> <p>A. Both lactose and glucose are metabolized at similar rates.        B. Lactose operon is not transcribed.        C. Lactose metabolism is favored.        D. Elevated levels of cAMP are synthesized.</p>	<p><b>16.</b> When was the first gene therapy patient treated?</p> <p>A. 1988        B. 1990        C. 1993        D. 1999</p>
<p><b>17.</b> Which gene is often removed to create <u>replication-deficient adenoviruses</u>?</p> <p>A. E1        B. L1        C. L3        D. L5</p>	<p><b>18.</b> Lactose utilization by E. coli requires the gene _____ which <u>transports lactose</u> into the cell.</p> <p>A. LacZ        B. LacA        C. LacY        D. LacI</p>
<p><b>19.</b> Which of the following cell types or systems is <u>not</u> part of an innate immune response to a pathogen?</p> <p>A. Phagocytes        B. Natural killer cells        C. The inflammatory response        D. Cytotoxic T-lymphocytes</p>	<p><b>20.</b> Retrovirus <u>pol gene</u> does not encode for which of the following enzymes?</p> <p>A. Protease        B. Integrase        C. Reverse transcriptase        D. RNA polymerase</p>

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<p>21. Which immunoglobulin would opsonize bacteria:</p> <p>A. IgA          B. IgM          C. IgG          D. IgE</p>	<p>22. C-peptide of human insulin is:</p> <p>A. A part of mature insulin molecule.          B. Responsible for formation of disulphide bridges.          C. Removed during maturation of pro-insulin to insulin.          D. Responsible for its biological activity.</p>
<p>23. CD4+ cells are:</p> <p>A. T helper cells          B. cytotoxic T cells          C. macrophages and B cells          D. All of the above</p>	<p>24. The major immunoglobulin in human serum is:</p> <p>A. Immunoglobulin A          B. Immunoglobulin E          C. Immunoglobulin G          D. Immunoglobulin M</p>
<p>25. Adoptive transfer of acquired immune responsiveness involves the transfer of:</p> <p>A. Antibody          B. Complement          C. Lymphocytes          D. Serum.</p>	<p>26. A discontinuous antigen epitope is:</p> <p>A. Presented by MHC molecules.          B. Representative of only a minority of B-cell epitopes.          C. Produced by a continuous linear peptide sequence.          D. Produced by amino acid residues on non-adjacent polypeptide sequence.</p>
<p>27. Secondary antibody responses are better because:</p> <p>A. They provide defense against unrelated antigens.          B. The antibody can be made by both T and B cells.          C. They do not require T-cell help.          D. They are stronger and faster and last longer.</p>	<p>28. Which of the following statements does not apply to IgG?</p> <p>A. Appears early in the primary immune response.          B. Neutralizes bacterial toxins or Opsonizes bacteria.          C. Can fix complement.          D. Crosses the human placenta.</p>
<p>29. Plasmids are used to clone fragments:</p> <p>A. That are 35–50 kb in length          B. Less than 15 kb          C. 100 kb          D. 350 Mb</p>	<p>30. In endogenous antigen processing, foreign antigen is presented to which type of cells?</p> <p>A. B cells          B. Helper T cells          C. Cytotoxic T cells          D. Red blood cells</p>

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<p><b>31.</b> Why is using an adjuvant in a vaccine preparation advantageous?</p> <p>A. It prevents pain during the injection.        B. It enhances the immunogenicity of the antigen.        C. It helps prevent back-mutations of attenuated microbes.        D. It prevents local reactions at the injection site.</p>	<p><b>32.</b> Pegasys is a PEGylated interferon alpha 2a used for treatment of:</p> <p>A. Arthritis        B. Multiple sclerosis        C. Chronic hepatitis C        D. Chronic granulomatous disease</p>
<p><b>33.</b> Which insulins should never be mixed?</p> <p>A. Rapid-acting insulins        B. Short-acting insulins        C. Intermediate-acting insulins        D. Long-acting insulins</p>	<p><b>34.</b> The effect of cytokine on multiple cell types is:</p> <p>A. Pleiotropic        B. Synergetic        C. Redundant        D. Antagonistic</p>
<p><b>35.</b> What is the onset, peak, and duration of NPH insulin?</p> <p>A. 2-4 hrs, 4-12 hrs, 16-20 hrs        B. 1-2 hrs, 2-8 hrs, 14-24 hrs        C. 3-4 hrs, 6-12 hrs, 18-24 hrs        D. 2-4 hrs, 4-6 hrs, 16-20 hrs</p>	<p><b>36.</b> Immunological unresponsiveness to self antigens is called:</p> <p>A. Tolerance        B. ADCC        C. Memory        D. Acquired immunity</p>
<p><b>37.</b> What is the onset, peak, and duration of Humalog insulin?</p> <p>A. 60-90 mins, 1-3 hrs, 7-9 hrs        B. 10-30 mins, 1-1.5 hrs, 5-7 hrs        C. 50-60 mins, 2-4 hrs, 6-8 hrs        D. 15-30 mins, 0.5-2.5 hrs, &lt;5 hrs</p>	<p><b>38.</b> The process of weakening pathogen is called:</p> <p>A. Vaccination        B. Attenuation        C. Immunization        D. Sensitization</p>
<p><b>39.</b> Aldesleukin is a non-glycosylated human recombinant interleukin-2 used for treatment of:</p> <p>A. Hepatitis B        B. Rheumatoid Arthritis        C. Renal cell carcinoma        D. Hairy cell leukemia</p>	<p><b>40.</b> Avonex is an interferon <math>\beta</math>1a used for treatment of:</p> <p>A. Relapsing/remitting multiple sclerosis        B. Metastatic melanoma        C. Chronic Hepatitis C        D. Chronic granulomatous disease</p>



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**Question Three:****20 Marks**

- A. What are the characteristic of ideal pump?
- B. List the potential factors that interfere with successful targeting of protein to tumor cells?
- C. What are parameters controlling the fate of particulate carriers in vivo?
- D. Liposomes have gained considerable attention among colloidal particulate system proposed for site specific delivery of protein. What are the advantages of liposomes over other non-particulate systems?
- E. What are the primary chemical and physical stability issues with human insulin formulations?

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**Question Four:****20 Marks**

- A. List 2 advantages and 2 disadvantages associated with retrovirus and adenovirus the vectors used in clinical trials for cancer therapy?
- B. What is the purpose of the packaging cell line during the production of recombinant viral vectors for gene transfer?
- C. Several approaches used for non-viral gene transfer. List at least two of them showing their advantages and disadvantages?
- D. What approaches could have been selected to prevent the growth and spread of malignant tissue? Explain the principle behind each.
- E. Provide at least two examples of how gene therapy is used to modulate the immune system to fight infection.

End of Questions-*Good Luck*