Biology of Salivary Glands 513
Final Examination
June 19, 2000

Multiple Choice (Pick the BEST answer)

1. Which of the following statements is not true:
   a. Older adults are more likely to have a dry mouth.
   b. Medications can cause salivary dysfunction.
   c. Younger adults are less likely to develop medication-induced salivary hypofunction.
   d. Salivary obstructions can occur in a person of any age.
   e. Sjögren's syndrome is a disease of primarily males aged 40-60 yr. **Correct**

2. When evaluating a patient with a complaint of a dry mouth, which procedure is conducted first?
   a. palpation of the parotid glands
   b. evaluation of oral mucous membrane tissues
   c. extraoral evaluation of neck and facial region
   d. review of the patient's medical and medication history **Correct**
   e. dental and periodontal examination

3. Which medication is least likely to cause a dry mouth?
   a. antihistamine
   b. antidepressant
   c. anti-Parkinson's drug
   d. diuretic
   e. non-steroidal anti-inflammatory **Correct**

4. Which diseases/conditions can cause salivary dysfunction?
   a. Sjögren's syndrome, rheumatoid arthritis, bacterial endocarditis
   b. AIDS, dehydration, candidiasis
   c. dehydration, Herpes Simplex, sialolith
   d. Diabetes, bacterial parotitis, pneumonia
   e. sialolith, AIDS, Mumps **Correct**

5, Which factors influence salivary production in a healthy adult?
   a. circadian rhythms, anticholinergic medications, pilocarpine **Correct**
   b. Candidiasis, sialolith, dehydration
   c. anticholinergic medications, gustatory stimulation, dental caries
   d. gustatory stimulation, Candidiasis, atropine
   e. periodontitis, circadian rhythms, acetaminophen

6. Treatment of salivary hypofunction can include all of the following except:
   a. fluoride supplements
   b. Pilocarpine
   c. salivary substitutes
   d. Atropine **Correct**
   e. reduction in intake of anticholinergic medications

7. Head and neck radiotherapy for oral-pharyngeal cancer causes:
   a. temporary salivary dysfunction during radiotherapy treatment
   b. permanent xerostomia but short-term salivary dysfunction
   c. dysgeusia and dysphagia **Correct**
   d. osteoradionecrosis of the maxillary bones
   e. oral Candidiasis and herpes zoster

8. Pilocarpine increases salivary output by:
   a. vasointestinal peptide stimulation
   b. muscarinic stimulation **Correct**
   c. beta adrenergic stimulation
   d. cholinergic inhibition
   e. beta adrenergic inhibition

9. Which of the following patients is most likely to benefit from pilocarpine?
   a. early Sjögren's syndrome **Correct**
   b. 10 years after bilateral head and neck radiotherapy
   c. taking multiple medications for diabetes, pulmonary edema, and coronary artery disease
   d. Mumps
   e. aplasia of the major and minor salivary glands

10. Which of the following oral conditions is most closely associated with salivary dysfunction?
   a. Pseudomembraneous Candidiasis **Correct**
   b. Herpes simplex
   c. Recurrent aphthous stomatitis
   d. Juvenile periodontitis
   e. Hepatocellular carcinoma

11. Organized mucosa-associated lymphoid tissue is
   a. found in the lymph nodes.
   b. associated with specialized M-cells that transport antigen. **Correct**
   c. filled with plasma cells that are producing antibodies.
   d. composed primarily of M-cells and L-cells.
   e. none of the above

12. Transepithelial transport of antigen is important because without it
   a. antigen would not be detected by the lymphoid cells in O-MALT. **Correct**
   b. antigen would not be detected by the lymphoid cells in D-MALT.
   c. polymeric antibody would not be pumped through the epithelial cells
   d. vascular addressins would target the wrong cell types.
   e. none of the above

13. Saliva is an excellent body fluid to use to determine compliance in clinical studies because
   a. it is easily and painlessly collected. **Correct**
   b. it is easier to store.
   c. it is easier to measure.
   d. it is clear
   e. none of the above.

14. Gingival crevicular fluid is
   a. produced by minor salivary glands.
   b. exudate from the buccal surfaces of the gingiva.
   c. derived from serum that is expressed from inflamed gingival sulci. **Correct**
   d. derived from saliva that is expressed from inflamed blocked salivary glands.
   e. none of the above.

15. Gene therapy procedures allow investigators to
   a. add new metabolic functions to cells that previously did not have those functions.
   b. convert cells into factories that produce specific pharmacologically-important compounds.
   c. introduce anti-metabolic activities to disrupts tumor cell growth.
   d. all of the above. **Correct**
   e. none of the above.

16. Mucosal immunity provides most of its protection by blocking
    a. microbial receptors specific for colonization.
    b. the complement cascade.
    c. blocking penetration of undigested food products into the mucosal tissues.
    d. a and c **Correct**
    e. none of the above

17. Protease resistance is an important feature for a secretory immunoglobulin protein because
    a. the mucosal surfaces are generally parts of the body rich in proteolytic microorganisms. **Correct**
    b. the salivary glands produce a lot of proteases that might degrade immunoglobulins.
    c. complement activation generates protease activity that would degrade them.
    d. all of the above
    e. none of the above

18. The homing specificity of cells of the O-MALT are acquired upon
    a. fetal development of the cells
    b. exposure to D-MALT
    c. exposure to proinflammatory cytokines
    d. exposure to antigen **Correct**
    e. none of the above

19. Restriction endonucleases are enzymes that enable the researcher to
    a. digest RNA that is not needed in transfection experiments.
    b. cut out specific regions of DNA based on the specificity of the enzymes for specific nucleotide sequences. **Correct**
    c. digest protein is that bound to DNA that might interfere with the gene transfer.
    d. reconnect oligonucleotides into continuous strands of DNA.
    e. none of the above

20. If you were to use saliva to monitor levels of a protease-sensitive medication, it would be best to use parotid saliva, because
    a. it could be collected without contamination by other substances, potentially proteolytic, found in whole saliva. **Correct**
    b. parotid saliva contains high concentrations of protease inhibitors.
    c. it contains high concentrations of mucins that inhibit proteolytic activity.
    d. all of the above
    e. none of the above

True/False (enter "A" for true and "B" for false)

21. Inflammatory reactions are commonly associated with mucosal immunity and play an important role in maintenance of mucosal health. **False**
22. Secretory component is generally synthesized by the plasma cells once sufficient IgA has been produced and ready to be pumped onto the mucosal surface. **False**
23. Langerhans cells are another name for M-cells. **False**
24. Transepithelial transport of antibody and antigen are mediated by a different mechanisms. **True**
25. Salivary flow is influenced by time of the day. **True**
26. Whole saliva would not be expected to contain IgG. **False**
27. M-cells prevent pathogens from penetrating the epithelial cell layer of the mucosa. **False**
28. One would not expect to find SC associated with IgA in the serum. **True**

29. Viruses are often used in gene therapy trials to transfer genetic material because they are much safer to use than other means. **False**
30. Homing is a process by which cells leave the O-MALT and randomly migrate until they encounter vascular addressins that bind to their cell surface receptors. **True**