BIOS 328 – IMMUNOLOGY
Quiz #4 – March 4, 2003

NAME:___MASTER_____

1. Define cytokine.

"Any of numerous secreted, low molecular weight proteins that regulate the intensity and duration of the immune response by exerting a variety of effects on lymphocytes and other immune cells."

+2 points

2. Define chemokine.

"Any of several secreted low-molecular-weight polypeptides that mediate chemotaxis for different leukocytes and regulate the expression and/or adhesiveness of leukocyte integrins."

+ 1 point

3. What do the letters "IL" abbreviate when referring to a cytokine?

InterLeukin

+ 1 point

4. What do the letters "TNF" abbreviate when referring to a cytokine?

Tumor Necrosis Factor

+ 1 point

5. What do the letters "IFN" abbreviate when referring to a cytokine?

InterFeroN

+ 1 point

6. What word is used to refer to the self-stimulatory activity of cytokines?

autocrine

+ 1 point

7. Define "kinase."

(1947) an enzyme that catalyzes the transfer of phosphate groups from a high-energy phosphate containing molecule (as ATP) to a substrate

+3 points

8. What word is used to refer to multiple effects of a gene or a cytokine?

pleiotropic

+ 1 point

9. Two types of cells, more than any others, regulate the immune response through the secretion of cytokines. What are the identities of those two cell types?

i. T_H -cells +2 points

ii. macrophages +2 points

10. TCR's are "heterodimers." What does the word "heterodimer" mean?

a protein composed of two separate and non-equivalent proteinaceous subunits

+2 points

11. TCR's are "heterodimers." There are two classes of heterodimers among T-cells which are distinguished by the constitutent protomers. How are these two classes specified?

i. áâ +2 points

ii. ãä +2 points

12. Many gene segments between a V segment and a J segment of genes specifying an á or ã protein of a TCR are deleted. Why are gene segments *"upstream"* of a V segment not expressed?

too far from "ENHANCER" +2 points

13. What is a function of a "co-stimulatory" signal?

contribute to activation; that is, prevents anergy

+3 points

PART II

(Question 4 from the Study Questions...) Several membrane molecules, in addition to the T-cell receptor, are involved in antigen recognition and T-cell activation. Desribe the properties and distinct functions of the following T-cell membrane molecules:

a. CD2:
"Adhesion molecule involved in T-cell activation"
+ 1 point

b. CD3:
"Essential role in TCR signal transduction and in cell-surface expression of the TCR"
+3 points

c. CD4:
"Coreceptor for MHC class II-restricted T-cell activation; thymic differentiation marker for T cells; receptor for HIV"
+2 points

d. CD8:
"Coreceptor of MHC class I-restricted T cells"
+2 points

(Question 5 from the Study Questions...) Indicate whether each of the properties listed below applies to the T-cell receptor (**TCR**), B-cell immunoglobulin (**Ig**), or both (**TCR/Ig**):

a. ___TCR__ Is associated with CD3. +2 points

b. ___TCR__ Is monovalent. +2 points

c. ___Ig __ Exists in membrane-bound and secreted forms. +2 points

d. _TCR/Ig_ Contains domains with the "immunoglobulin fold" structure. +2 points

e. _TCR___Is MHC restricted. +2 points

f. _TCR/Ig_ Exhibits diversity generated by imprecise joining of gene segments. +2 points

g. ___Ig___ Exhibits diversity generated by somatic mutation. +2 points

h. __TCR_ May contain multiple "diversity" segments. +2 points