### Assignment 5
Due on 2029-10-11 21:00:00

#### Unit 7 - Week 5

**Task 1:**
1. A T cell recognition antigen is a peptide bound to a particular allele variant of an MHC molecule and will not recognize the same peptide bound to other MHC molecules. The behavior of T cells activated by MHC I molecules:
   a. Exclusivity
   b. Between families
   c. Between species
   d. Non-stop

**Task 2:**
1. Diversity of MHC molecules seen both within and between the populations is due to:
   a. polymorphism only
   b. polymorphism and polygyny
   c. V. D. J. recombination

**Task 3:**
1. Which of the following is correct with respect to T cell activation?
   a. Supergene needs to be processed by the endoplasmic reticulum
   b. Supergene needs to be processed by the cytoplasmic pathway
   c. Supergene does not require any processing
   d. Supergene can be processed by both the endoplasmic or cytoplasmic pathway

**Task 4:**
1. Generation of antigen peptide for MHC class I occurs in:
   a. Rough Endoplasmic Retention
   b. Cistron
   c. Ribosome
   d. Endosome

**Task 5:**
1. Choose the correct combination from part I and part II:

<table>
<thead>
<tr>
<th>Part I</th>
<th>Part II</th>
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<tbody>
<tr>
<td>A. TAP</td>
<td>a. Breaks and removes dipeptide bonds in the MHC class I sequence during peptide binding</td>
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<tr>
<td>B. ER</td>
<td>b. Moves the MHC class I trimming to a partially inserted site</td>
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<td>C. ERp</td>
<td>c. Forms a bridge between the MHC class I molecule and the TAP complex</td>
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</tbody>
</table>

**Task 6:**
1. Antigen binding with MHC II is mediated by:
   a. CD40L
   b. HLA-DR
   c. TCR
   d. MHC class I

**Task 7:**
1. Three major cell types, dendritic cells, macrophages, and B cells, present peptides bound to MHC class I molecules for recognition by CD8 T cells. In general, these peptides are:
   a. Short (8-10 amino acids)
   b. Small (2-3 amino acids)
   c. Large (15-20 amino acids)
   d. Long (100-200 amino acids)

**Task 8:**
1. During MHC class I trimming and folding in the endoplasmic reticulum (ER), a process of peptide trimming takes place in the newly synthesized MHC class I precursor to a peptide-like carrier. The ER trimming occurs that the MHC class I molecules traffick on the cell surface. 

| a. Maintain high levels of MHC class I expression |
| b. Dormant that the MHC class I molecules in an unpolarized state |
| c. Reassort the mature MHC class I molecules in a peptide-present state |
| d. Allows surface MHC class I trimming to be activated by the extracellular mabs |

**Task 9:**
1. Choose the correct statements about a 4-15 T cell receptor:
   a. recognises antigen in peptides presented by MHC molecule
   b. recognises intact antigen molecule
   c. recognised an antigen epitope
   d. recognised a purified antigen peptide

**Task 10:**
1. A recent study showed that an increase in the expression of MHC molecules may occur in response to:
   a. Infection
   b. Stress
   c. Exercise
   d. All of the above

**Task 11:**
1. Which of the following best describes the role of MHC molecules in the immune system:
   a. They help to present antigens to T cells
   b. They are involved in the production of antibodies
   c. They are responsible for the synthesis of cytokines
   d. They play a role in the presentation of antigens to B cells