

Question 1:

All of the following statements about MHC class I polymorphisms are true except:

- They underlie the phenomenon of MHC restriction
- They can stimulate the rejection of transplanted tissue
- They are involved in determining where antigens are cleaved (into peptides)

Explanation:

MHC polymorphisms are on the surfaces of the molecules that bind peptides and that interact with T cell receptors. This influences what peptides the MHC molecule can bind and display to T cells, but not what peptides are generated during antigen processing. It also affects T cell receptor recognition leading to MHC restriction and transplant rejection.

- They can determine whether an individual can mount a T cell response to a particular peptide

Question 2:

MHC I molecules in most cells:

- Are loaded with peptides with the help of DM
- Make a self-nonself discrimination and present only foreign peptides
- Use a V-D-J-like recombination mechanism like antibodies to generate diversity
- Predominantly display antigens that are synthesized by cells

Explanation:

The peptides presented on MHC I molecules of most cells derive from proteins that are

synthesized by cells and are then hydrolyzed by proteasomes into oligopeptides.

Question 3:

MHC II molecules:

- Allow CD8+ T cells to identify and destroy tumors
- Monitor the antigens in endosomal compartments of cells

Explanation:

MHC II molecules predominantly present peptides that are generated from the catabolism of proteins in endocytic compartments.

- Are expressed by most cells
- Are loaded with peptides with the help of DO

Question 4:

Antigen cross-presentation:

- Is the process by which exogenous antigens are presented on MHC II molecules
- Requires the import of cytosolic antigens into phagosomes for antigen processing through autophagy
- Is a process where exogenous antigens are presented by MHC I molecules

Explanation:

By one or more pathways, exogenous antigens are presented by MHC I molecules on specialized dendritic cells to prime cytotoxic T cells.

- Requires DM to help remove the invariant chain-derived CLIP peptide