# CHAPTER 8

## MAJOR HISTOCOMPATIBILITY ANTIGENS, ENDOMETRIUM AND EMBRYO

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### What does major histocompatibility complex (MHC) stands for?

MHC is a set of cell surface molecules are playing essential role to the recognition of antigens by T cells. MHC represents peptide fragments to the T cells for the different immune responses. Because of first described on leukocytes are also called Human Leukocyte Antigens (HLA) (1).

### What are the types of MHC?

There are three types of MHC; MHC 1 (HLA-A, B, C) and MHC2 (HLA-DP, DQ, DR). Molecule structures are similar but MHC 1 presents viruses and tumor antigens that are intracellular antigens to CD8+ cytotoxic T cells and MHC do the same for bacterial antigens to CD4+ helper T cells. MHC 3 involves complement system (2).

### What happens after MHC captures the peptides?

MHC molecules are necessary while APC (Antigen Presenting Cells) presents the antigen to the T cells. After presentation to CD8+ T cells kill the infected cell. CD4+ T cells kill the cell by macrophages and some transforms to memory cells to another attack (3).

### Why are the MHC molecules related to autoimmune illness?

Firstly antigen must be processed before presentation to T cells by APC (Antigen Presenting Cells). Antigen processing refers to degradation of antigen fragments into peptides. Specialized APC's are dendritic cells, macrophages and B cells. Many peptides occurs and one of this similar to host antigens (e.g. endothelial cells, myelin). Thus immune response to foreign peptides, like viruses, turns and damages self antigens and the tissues (4).

## Pre-eclampsia

Many studies showed immunological basis of pre-eclampsia (PE). CD4+ FOXP3+ Treg cells have been found lower in the patients are suffered from PE. Changing partner, artificial donor insemination and oocyte donation increase the risk of preeclampsi in pregnancy, while there is a protective effect of be with the same partner prolonged period. Interaction between HLA-C ligands, trophoblast cells and KIR receptors on maternal cells are of crucial importance for remodelling of spiral arteries and immune tolerance (21-24).

## How antigen presentation occurs in the placenta?

Although MHC Class II and classical MHC Class I are not expressed from trophoblast cells HLA-G and HLA-E detected on placental cells. HLA-G and HLA-E are less effective than classical MHC class I molecules (HLA-A and -B) in terms of antigen presentation. This shift protects extravillous cytotrophoblast cells from NK cell mediated attack (25-27).

## References


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