T-4 Helper Cells

Th-cells (CD4⁺) reacting with Ag may produce a variety of lymphokines, notably, interleukin-2 (IL-2) stimulates T cell activation and IL-4 stimulates B cells, It is now clear that T-helper cells are composed of distinct subsets that can be distinguished on the basis of their patterns of lymphokine production.

- 1. Synthesize interleukins (protein hormones) which act as intercellular signals between lymphocytes
- 2. Action of T-4 interleukins
 - a. Th₁ Macrophage activation and the delayed-type hypersensititivty (DTH) reaction, and in help for TC cell activation
 - b. Th₂ cells also see foreign Ag on the surface of APC's in the context of MHC II.
- 3. Subsets of T-4 lymphocytes
 - a. Th₁ synthesizes γ -interferon, produce IL-2 and lymphotoxin
 - b. Th₂ secrete IL-4, IL-5, IL-6, IL-10 and IL-13 that help activate B cells, provide help for the production of IgE that attaches to mast cells, and promote mast cell and eosinophil activation





CYTOKINES

Cytokines are chemical signals that activate cells.

They are released by a variety of cells.

When released by: monocytes - monokines lymphocytes - lymphokines

Cytokines which participae in cellular "communication"between leucocytes are refered to as **interleukins**.







mo ce

est oy

NK] ce

E N

9

COPPIGH ENCORAVEHILL



T₄ Cells

T₄ cells have receptor for MHC and antigen.

The form of T_4 -cell receptors varies greatly.

Each type of T_4 -cell expresses just one type of receptor.

Some T_4 -cells have receptors that react with self-peptides. Self-reactive T_4 -cells are

destroyed (negative selection) before they initiate an immune response.

For negative selection to work effectively, developing T₄-cells must encounter self-peptides in the thymus.

Lymphocyte Receptors

1. B-cell receptors are antibodies.

1 ...

 T-cell receptors (TCR) bind to foreign peptides like antibody but they remain bound to the surface of T cells.

TCRs are variable like B-cell receptors.

TCR also bind to MHCs on macrophage and dendritic cells.

- When TCR is bound to MHC containing foreign peptide TCR is phosphorylated.
 Phosphorylated TCR send a signal to the T-cell nucleus to divide and produce interleukin.
- 7. T-cells form clones like B-cell.
- The immune system must have specific clones of B-cells and Tcells to rapidly respond to foreign antigen.