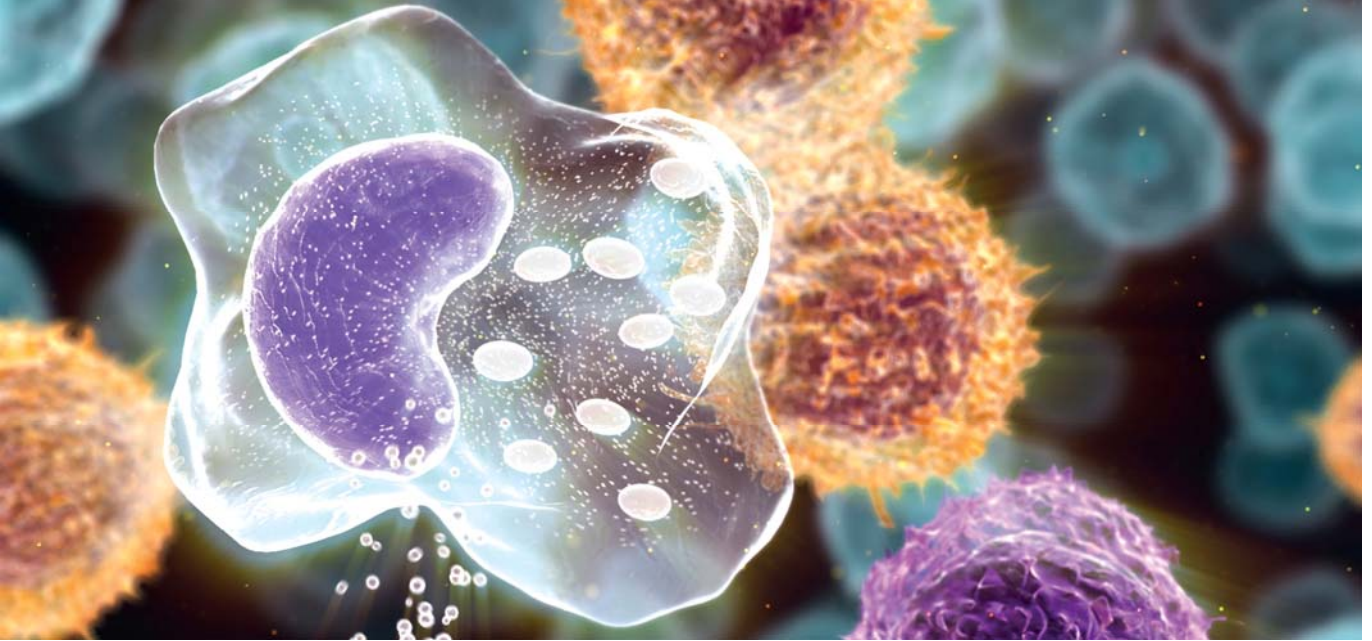


# Cytokines



Nordic **BioSite**

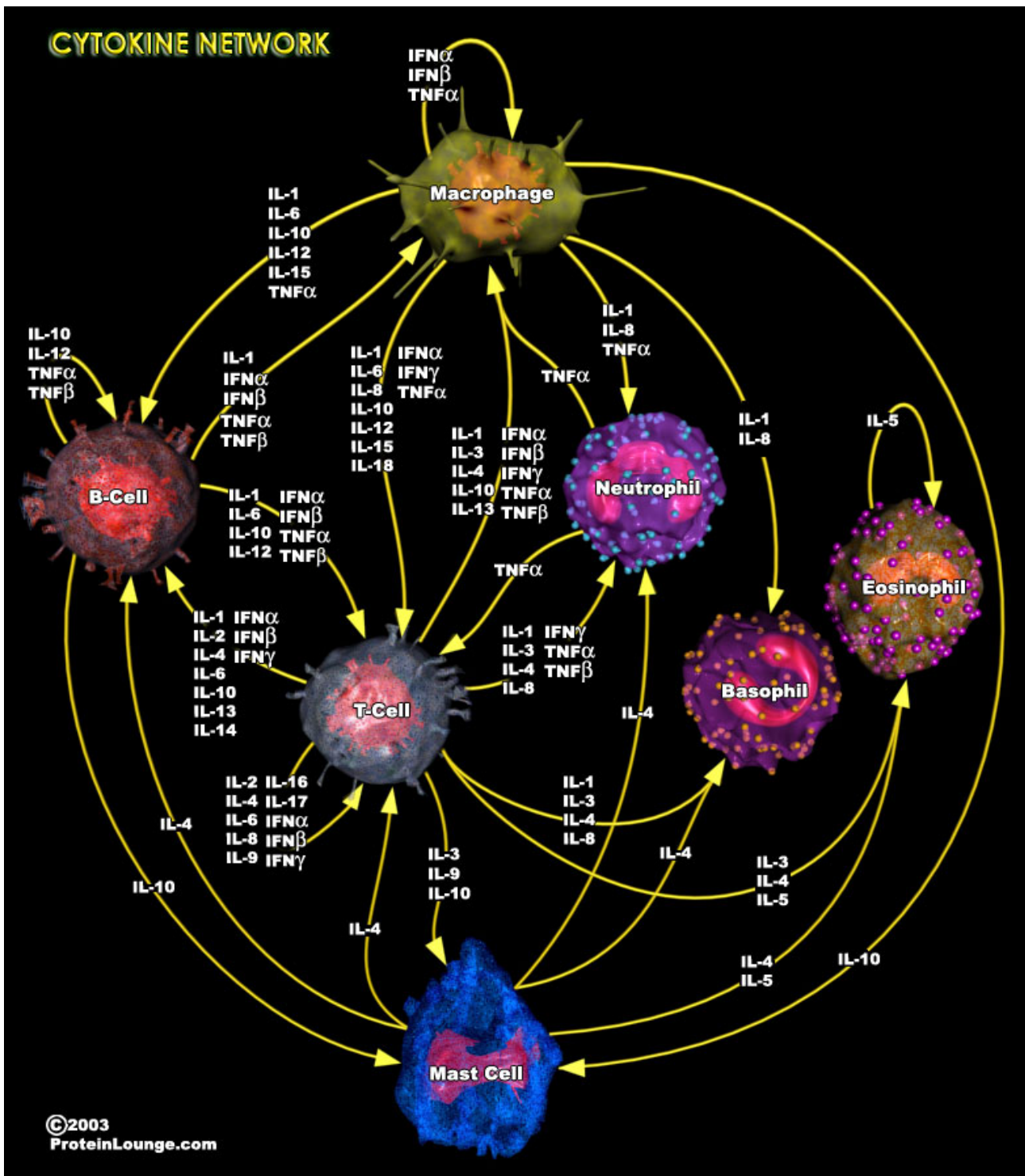
- by your side

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## Cytokines

The immune system recognizes the presence of pathogens by several proteins that bind to molecules secreted by the pathogen or carried on their surface. The cells responsible for these immune responses include the B-Cells, T-Cells, macrophages, neutrophils, basophils, eosinophils, endothelial cells, or mast cells. These cells have distinct roles in the immune system, and communicate with other immune cells by cytokines, which control proliferation, differentiation and function of cells of the immune system. Furthermore, they are involved in processes of inflammation and in the neuronal, haematopoietic and embryonal development of an organism. Unlike hormones, cytokines are not stored in glands as preformed molecules, but are rapidly synthesized and secreted by different cells mostly after stimulation. Cytokines are pleiotropic in their biological activities and play pivotal roles in a variety of responses, including the immune response, hematopoiesis, neurogenesis, embryogenesis, and oncogenesis. They frequently affect the action of other cytokines in an additive, synergistic or antagonistic manner.



## Difference in Expression system

### Human cell expressed

Production of human recombinant proteins from human cells, HEK cells.  
The new generation of growth factors and cytokines for ex vivo and in vivo therapeutic applications

- Authentic polypeptide sequence
- Authentic tertiary & quaternary structure
- Authentic post-translational modification
- Tag-free cytokines
- Longer half-life

### Cho cell expressed

Chinese Hamster Ovary (CHO) cells are of interest for bioprocessing and pharmaceutical research and development. These cells are robust in culture and are able to produce a variety of recombinant glycoproteins at high levels on a large scale

### Insect cell expressed

Insect cells are a higher eukaryotic system than yeast and are able to carry out more complex post-translational modifications than other.  
Baculovirus-insect cell expression system. Widely used to produce recombinant proteins, including glycoproteins.

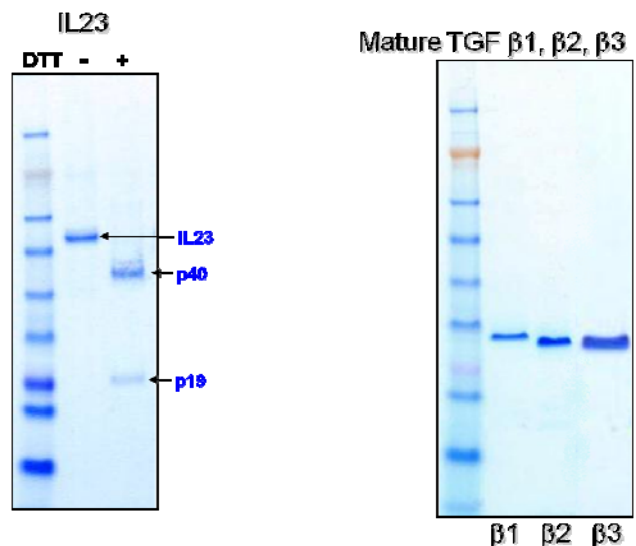
### E.coli expressed

The E. coli expression system gives cost-effective manufacturing of recombinant proteins. This system is used for antigen expression and functional protein expression for non-glycosylated proteins. Proteins available with standard or with ultra low endotoxin.

Expression system	<i>E. coli</i>	Insect cell	CHO cell	Human cell
Protein folding	+	++	+++	++++
Phosphorylation	?	++	+++	++++
Proteolytic processing	?	+	+++	++++
Glycosylation	-	Poor	Not human-like	Authentic

The advantage of Cytokines from human expressed cells

- More authentic quaternary structure
- Higher stability in media
- More authentic glycosylation
- More authentic antigens for antibody production
- Tools for more accurate research



# Antibodies, Reagents and Assay kits

Apoptosis



Cell Proliferation/  
Cell Cycle



Cellular Stress



Cytokines



Neuroscience



Cell Surface Antigens



Signal Transduction/  
Transcriptions factors



Epitope Tags



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