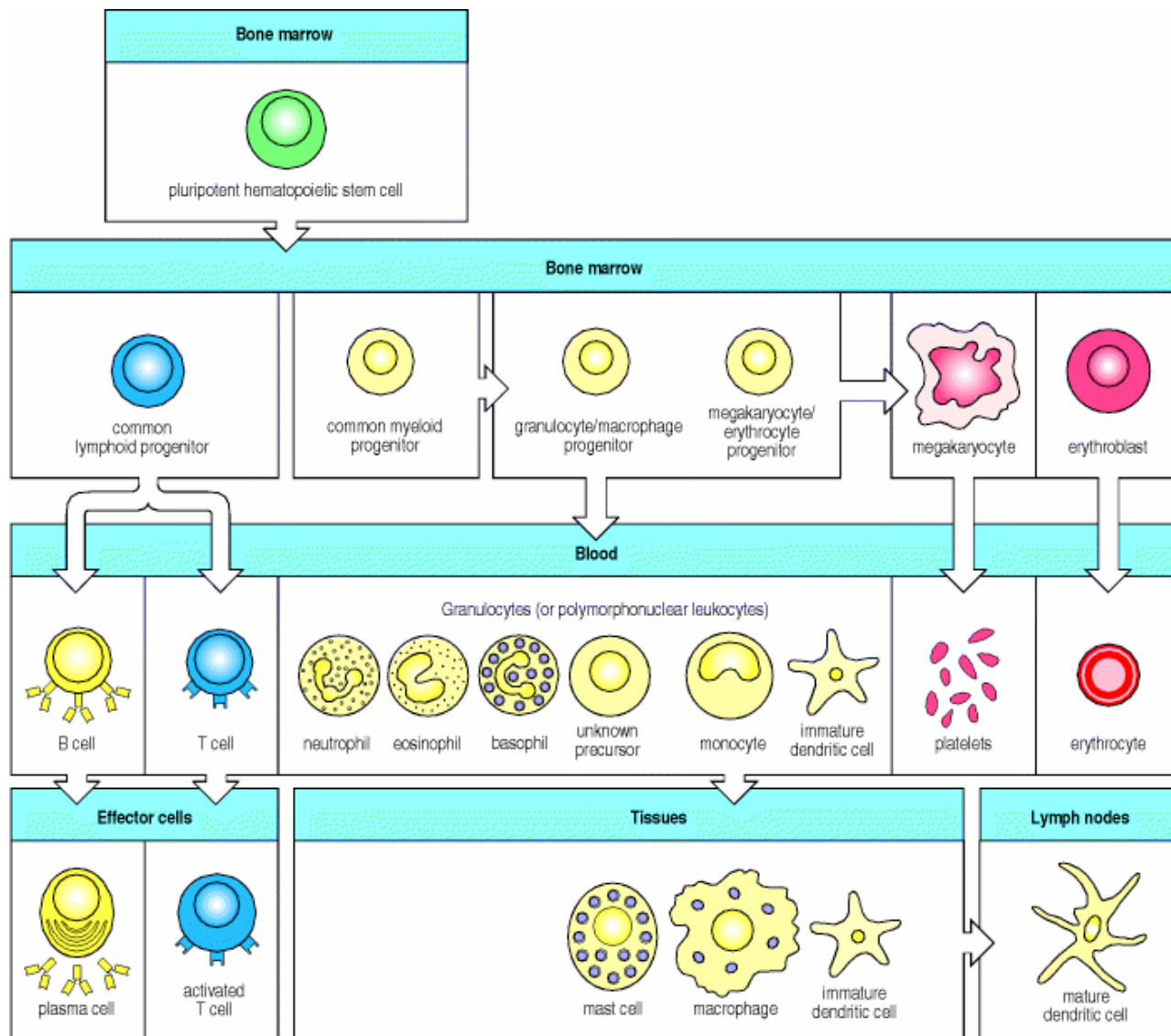
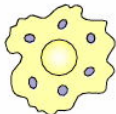
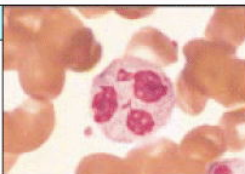
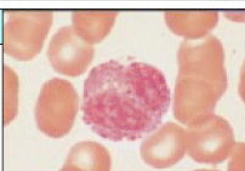
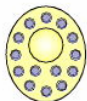
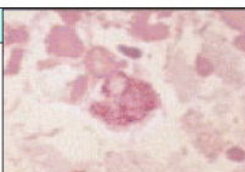


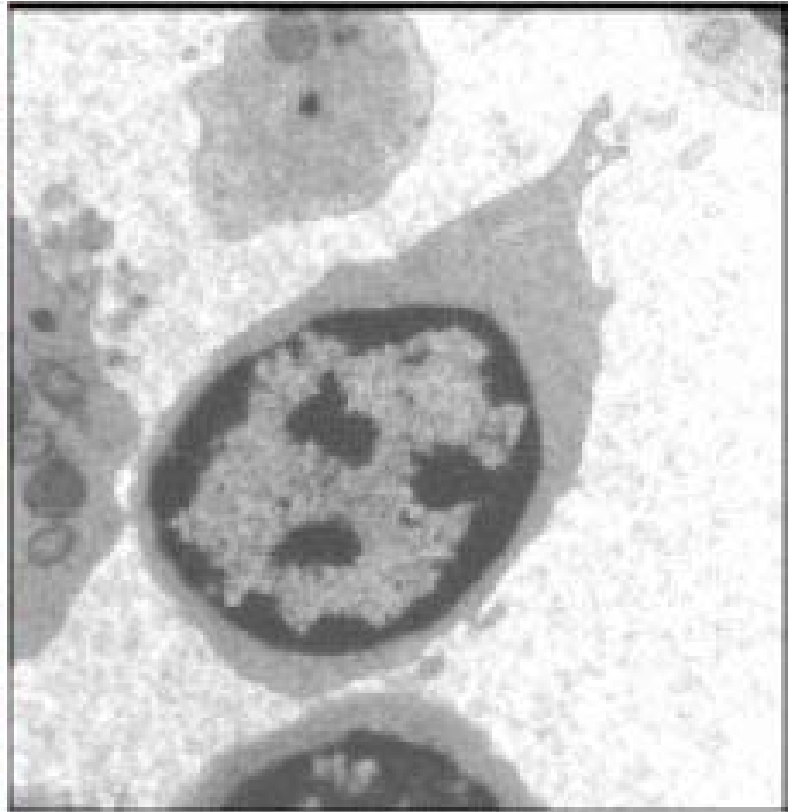
Principaux composants cellulaires et moléculaires du système immunitaire

Pierre-André Cazenave
Université Pierre et Marie Curie

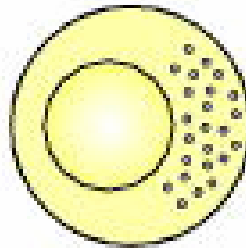
IF2005 IF-Ia&Ib
14 février 2005



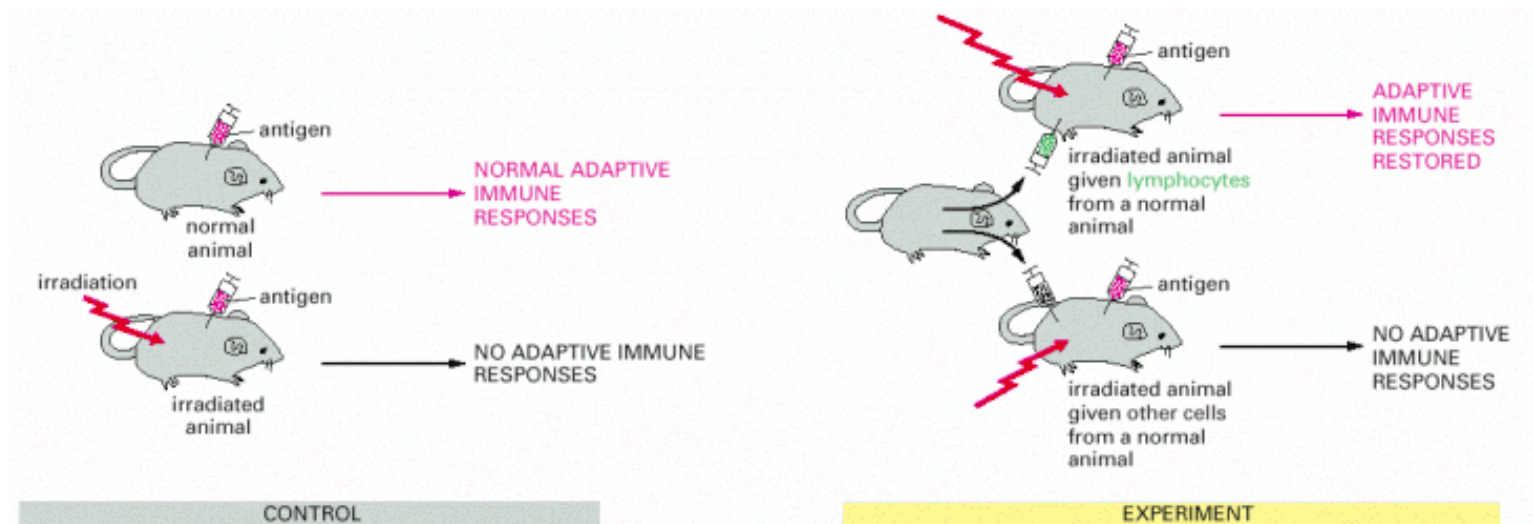
Cell		Activated function	
Macrophage			Phagocytosis and activation of bactericidal mechanisms Antigen presentation
Dendritic cell			Antigen uptake in peripheral sites Antigen presentation in lymph nodes
Neutrophil			Phagocytosis and activation of bactericidal mechanisms
Eosinophil			Killing of antibody-coated parasites
Basophil			Unknown
Mast cell			Release of granules containing histamine and other active agents

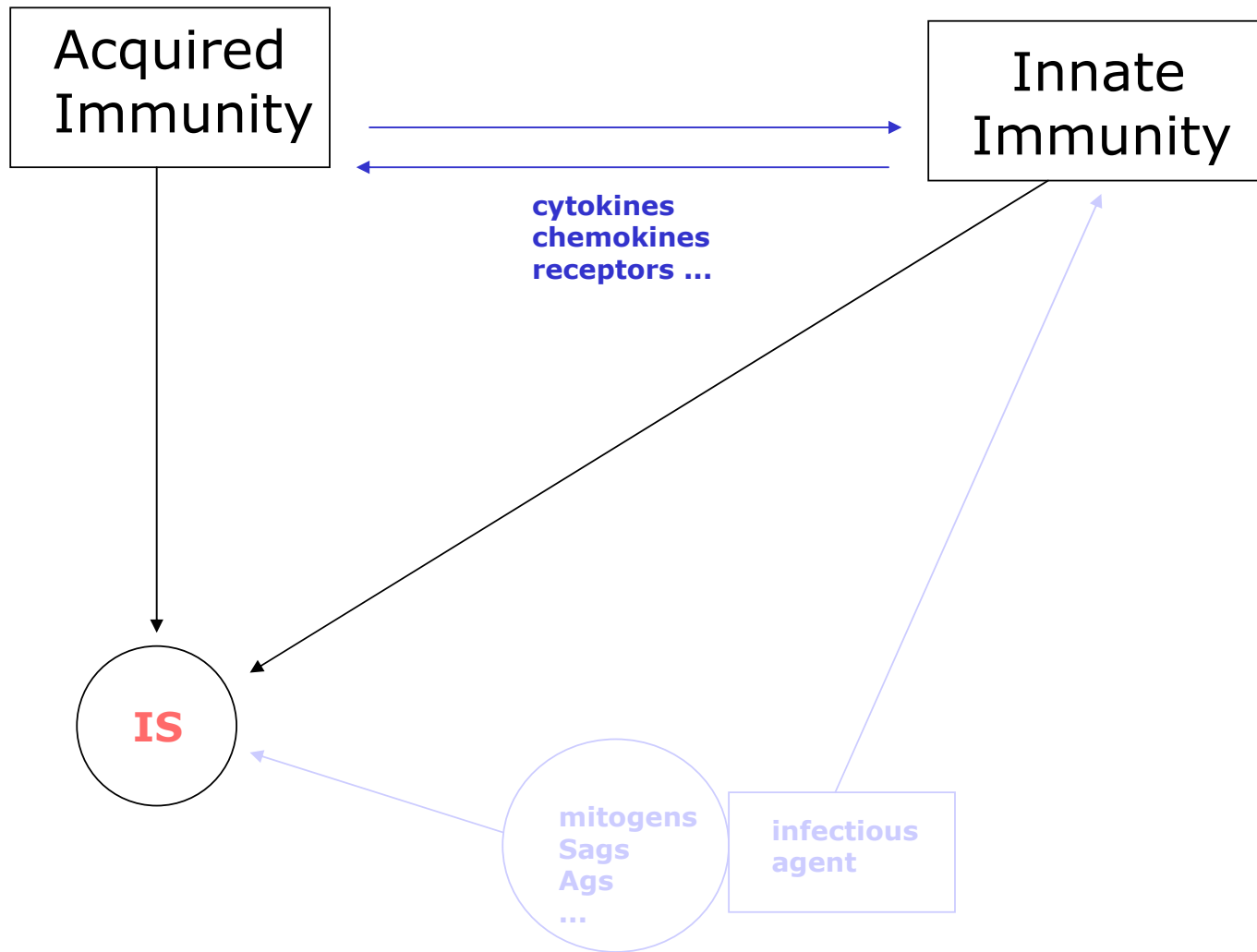


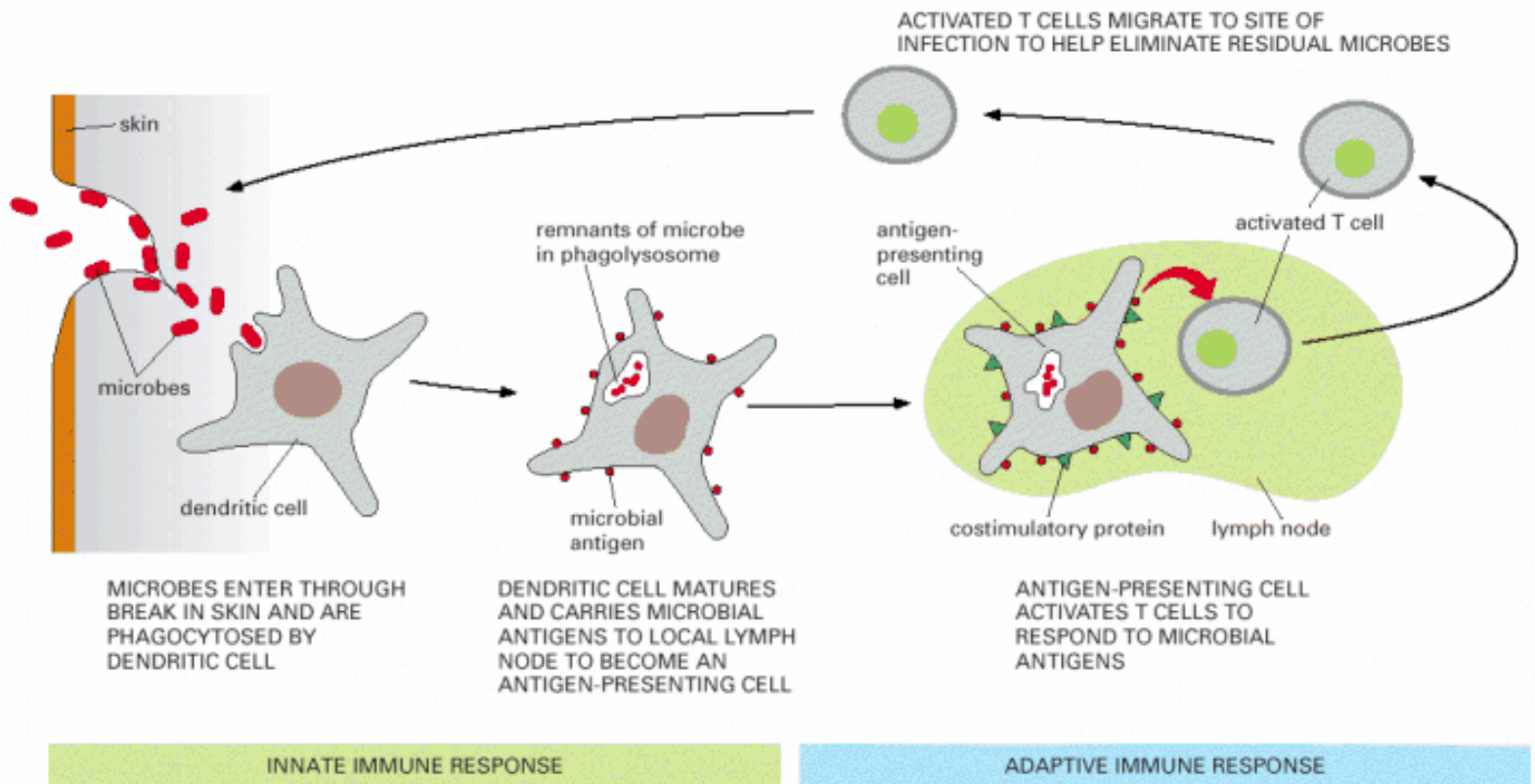
Natural killer (NK) cell



Releases lytic granules that kill some virus-infected cells



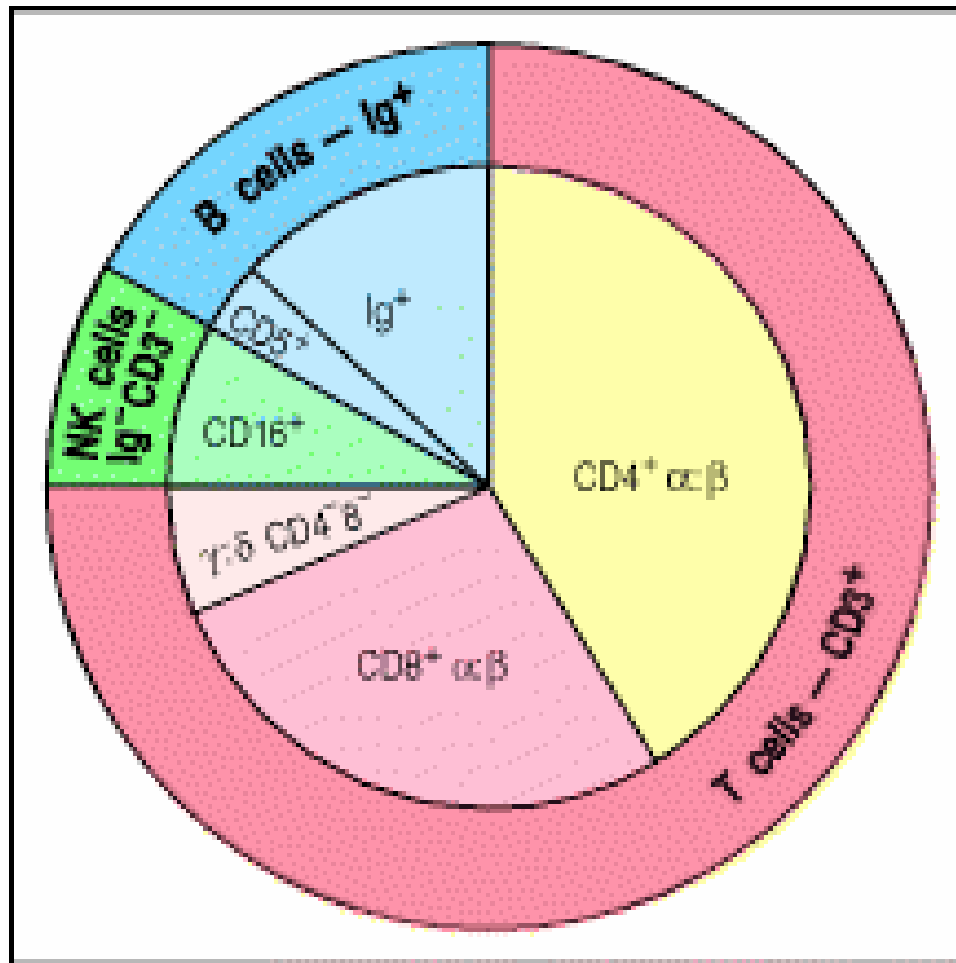


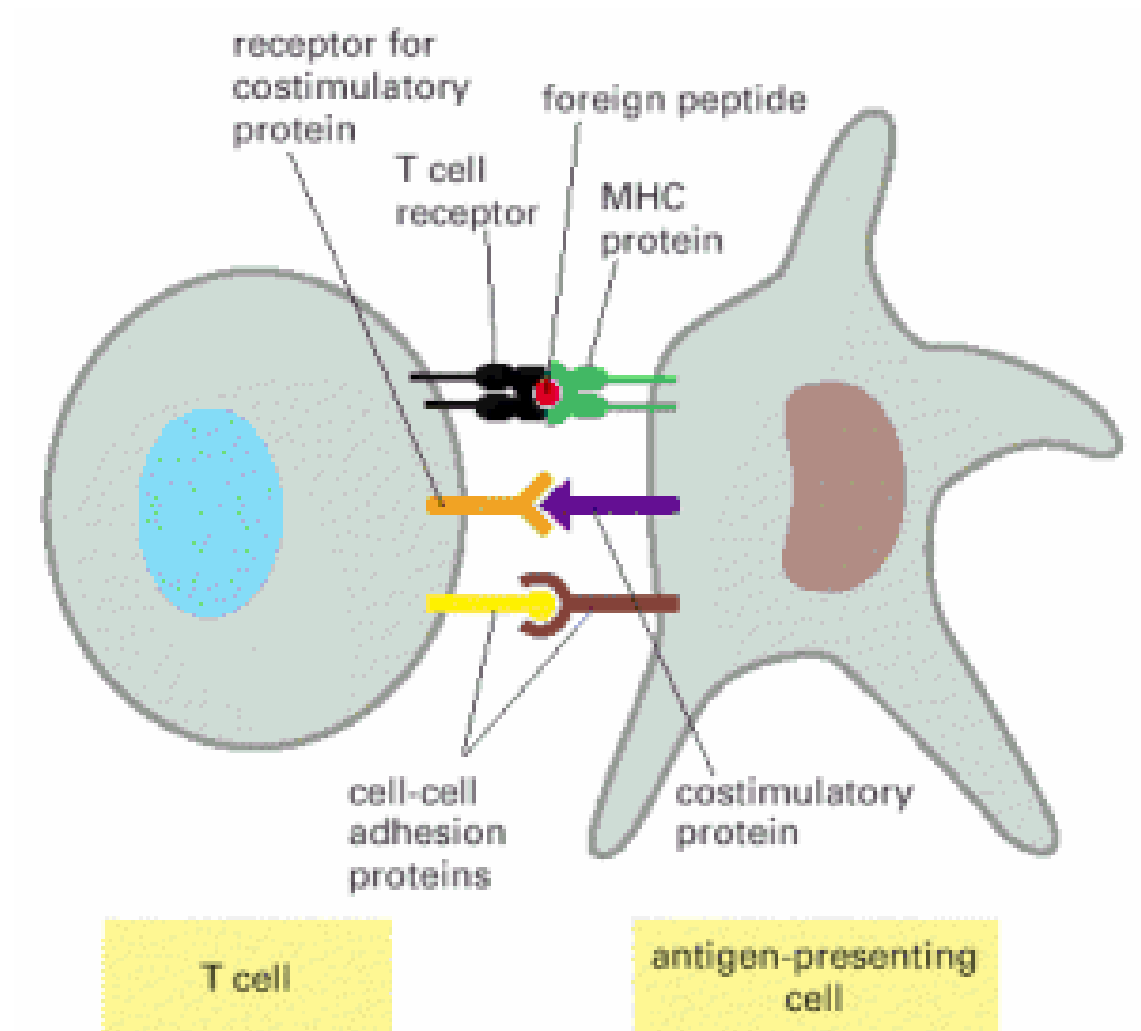


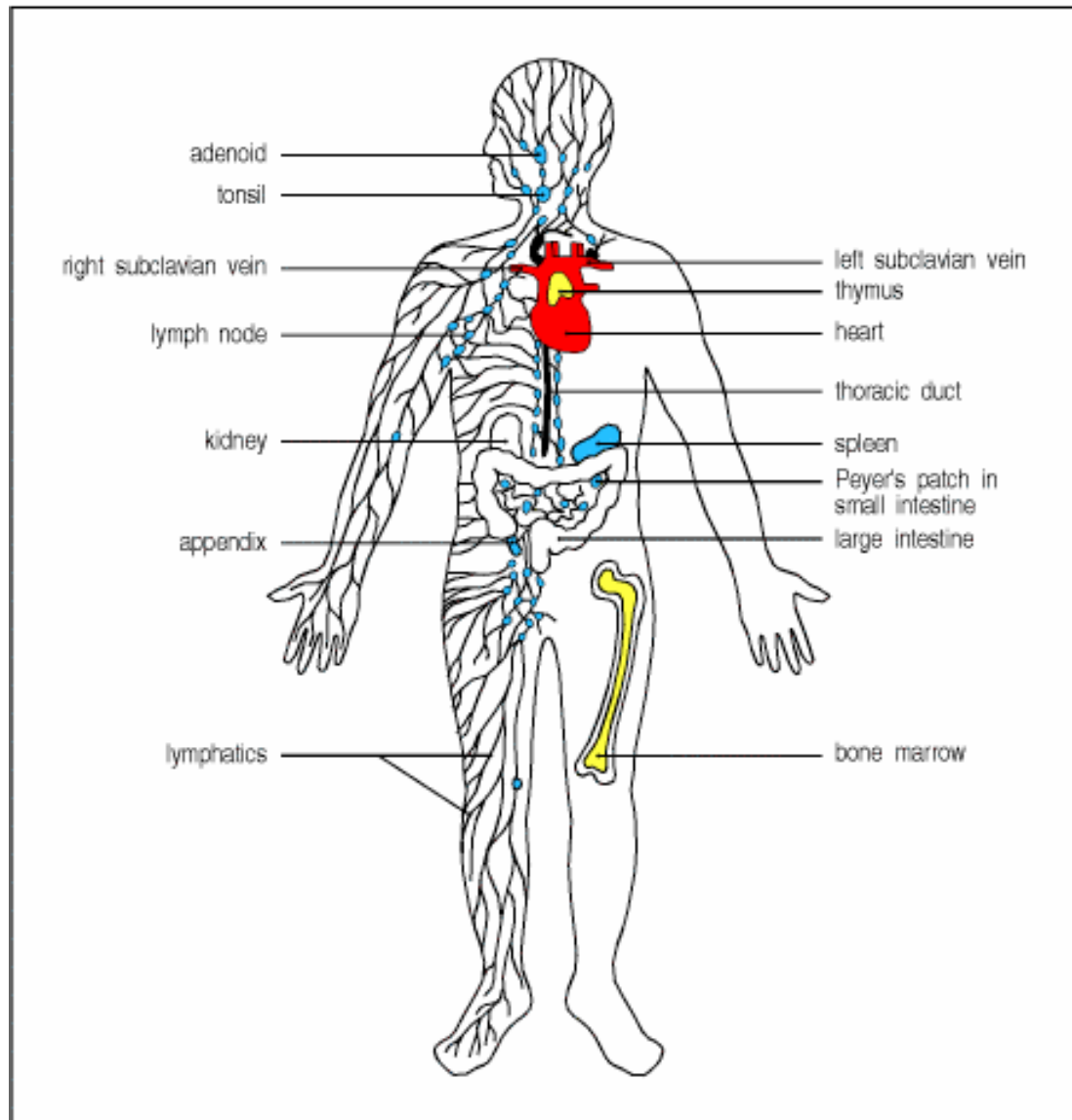
Receptor characteristic	Innate immunity	Adaptive immunity
Specificity inherited in the genome	Yes	No
Expressed by all cells of a particular type (e.g., macrophages)	Yes	No
Trigger immediate response	Yes	No
Recognize broad classes of pathogen	Yes	No
Encoded in multiple gene segments	No	Yes
Require gene rearrangement	No	Yes
Clonal distribution	No	Yes
Able to recognize a wide variety of molecular structures	No	Yes

Evaluation of the cellular components of the human immune system			
	B cells	T cells	Phagocytes
Normal numbers ($\times 10^9$ per liter of blood)	Approximately 0.3	Total 1.0–2.5 CD4 0.5–1.6 CD8 0.3–0.9	Monocytes 0.15–0.6 Polymorphonuclear leukocytes Neutrophils 3.00–5.5 Eosinophils 0.05–0.25 Basophils 0.02
Measurement of function <i>in vivo</i>	Serum Ig levels Specific antibody levels	Skin test	—
Measurement of function <i>in vitro</i>	Induced antibody production in response to pokeweed mitogen	T-cell proliferation in response to phytohemagglutinin or to tetanus toxoid	Phagocytosis Nitro blue tetrazolium uptake Intracellular killing of bacteria
Specific defects	See Fig. 11.9	See Fig. 11.9	See Fig. 11.9

Evaluation of the humoral components of the human immune system					
	Immunoglobulins				Complement
Component	IgG	IgM	IgA	IgE	
Normal levels in adults	600–1400 mg dl ⁻¹	40–345 mg dl ⁻¹	60–380 mg dl ⁻¹	0–200 IU ml ⁻¹	CH ₅₀ of 125–300 IU ml ⁻¹

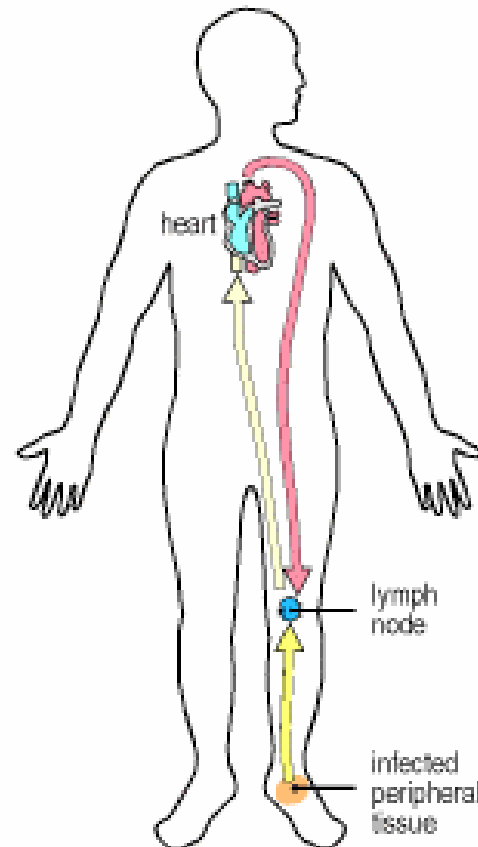




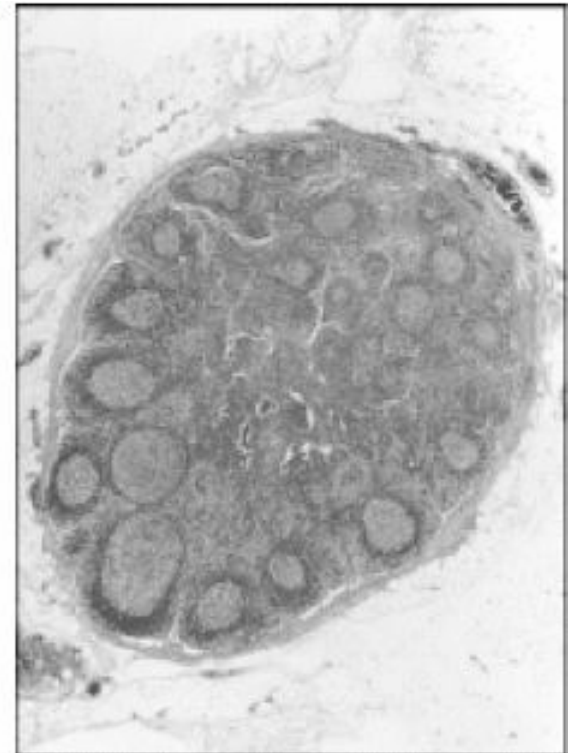
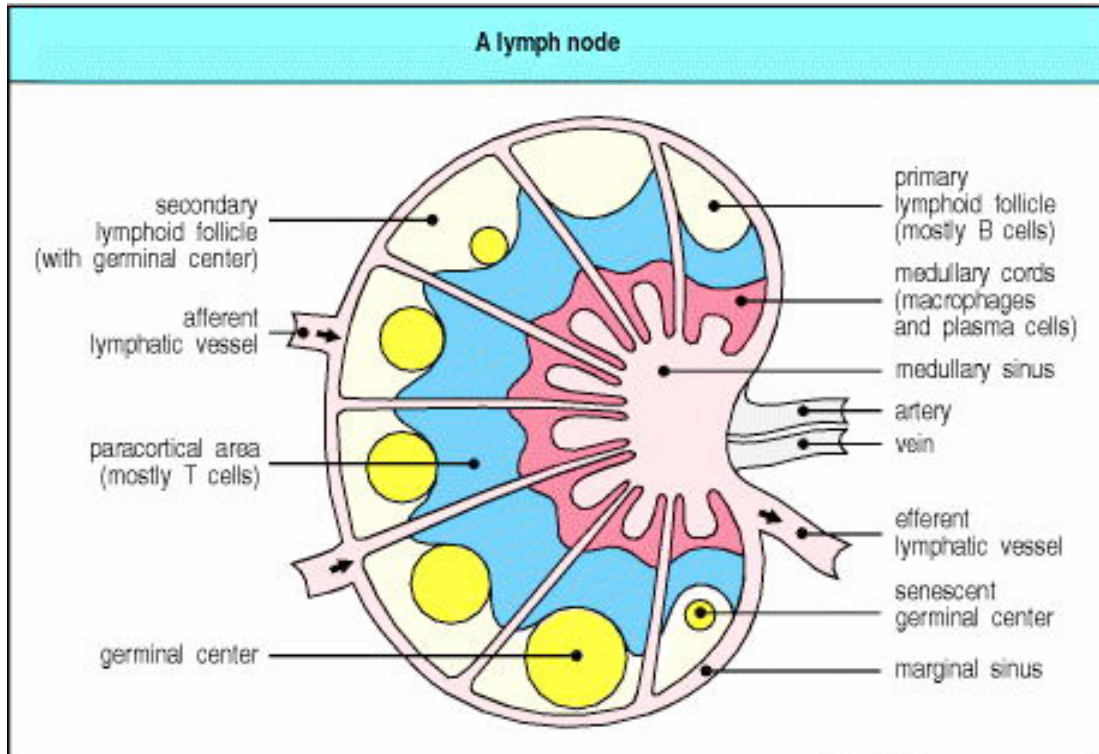


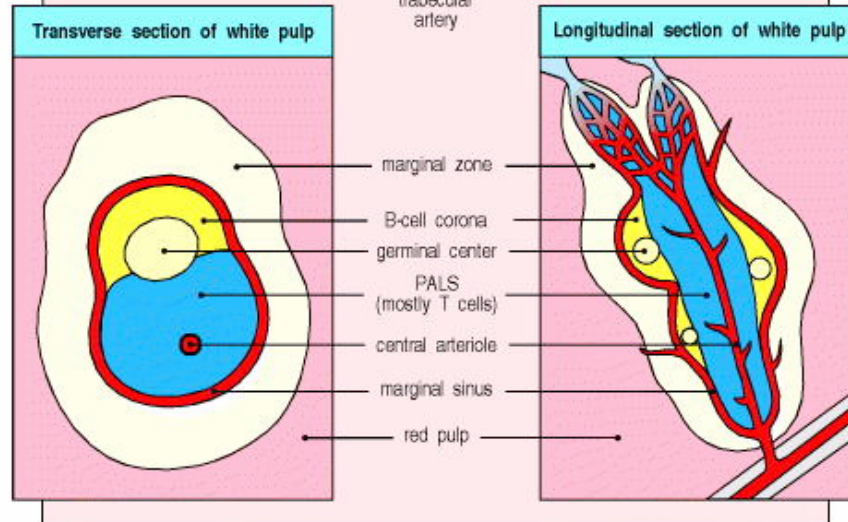
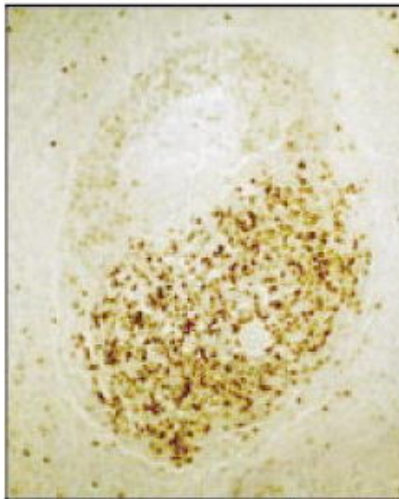
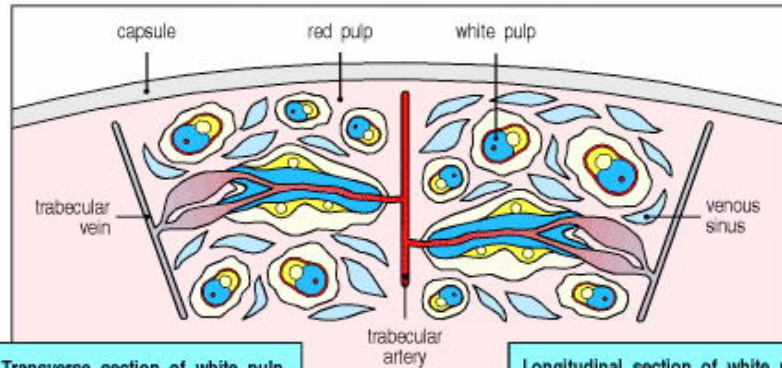
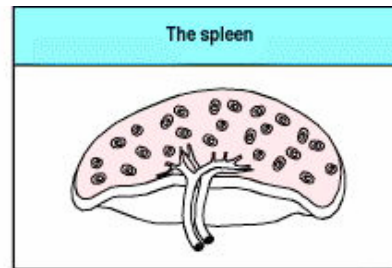
Lymphocytes and lymph return to blood via the thoracic duct

Naive lymphocytes enter lymph nodes from blood



Antigens from sites of infection reach lymph nodes via lymphatics

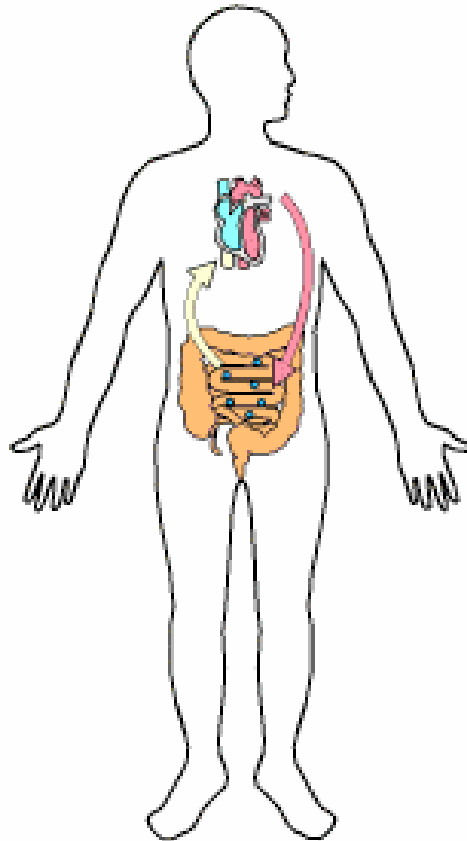




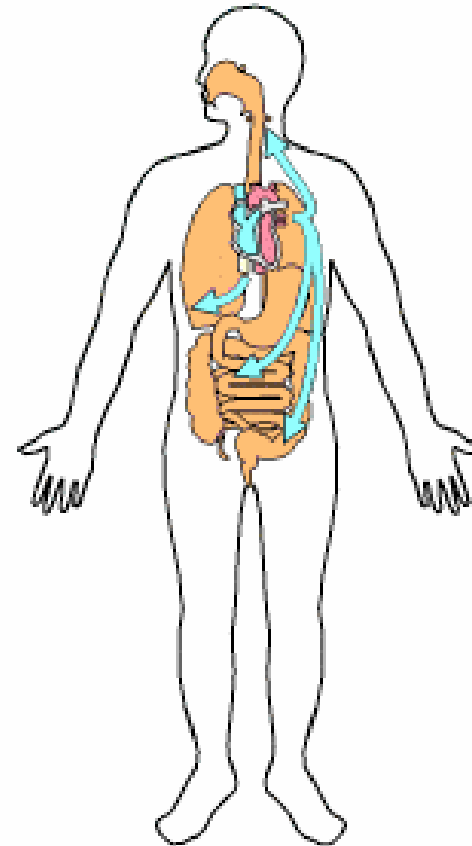
Lymphocytes and lymph return to blood via mesenteric lymph nodes and thoracic duct

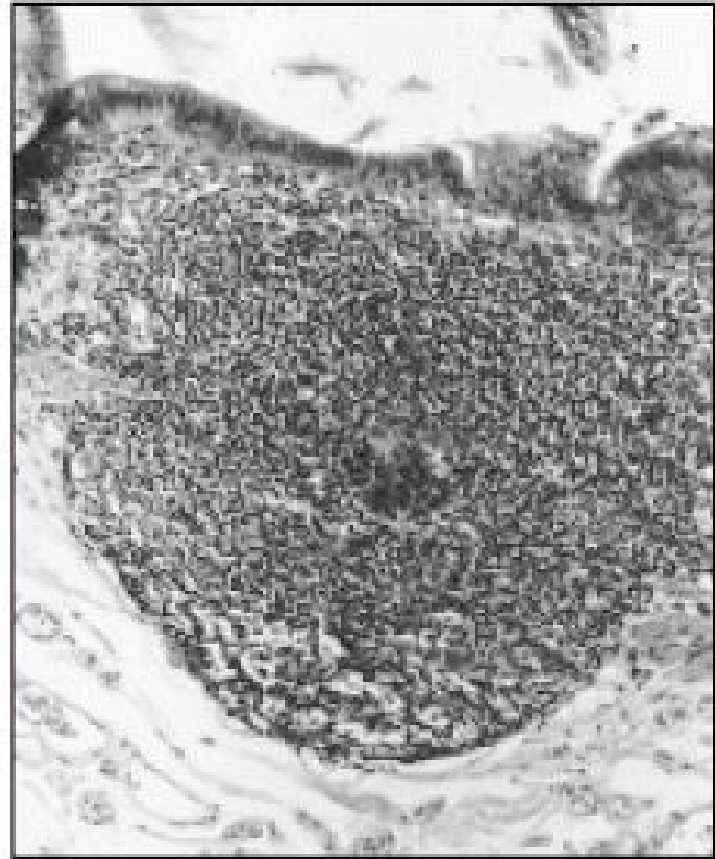
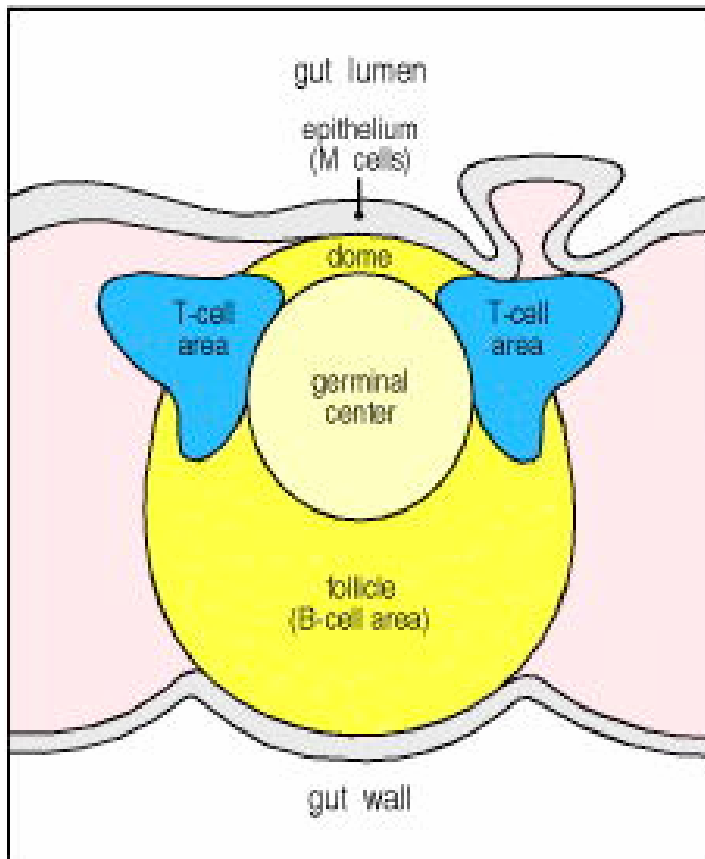
Naïve lymphocytes enter mucosal tissue from blood

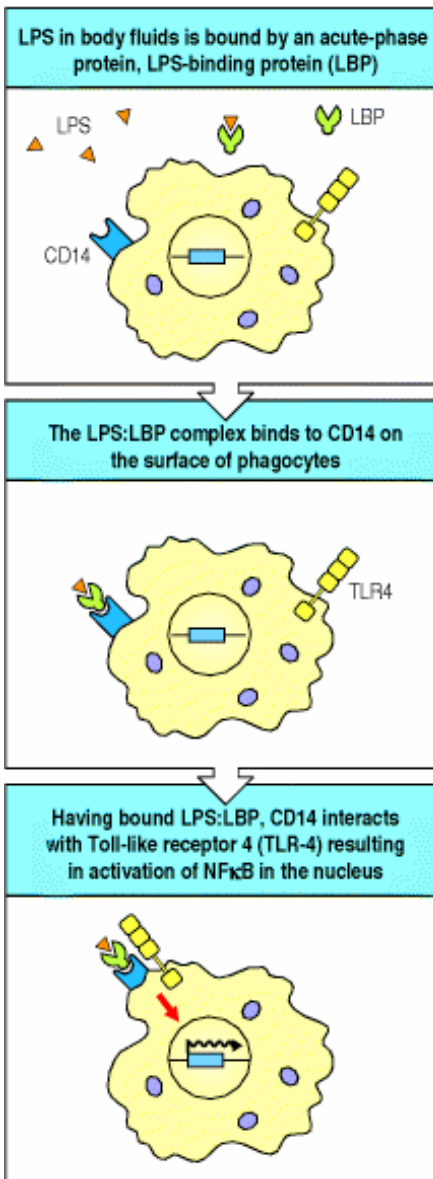
Effector lymphocytes disseminate to mucosal surfaces in lung, tonsil, adenoids, gut, and genitourinary tract

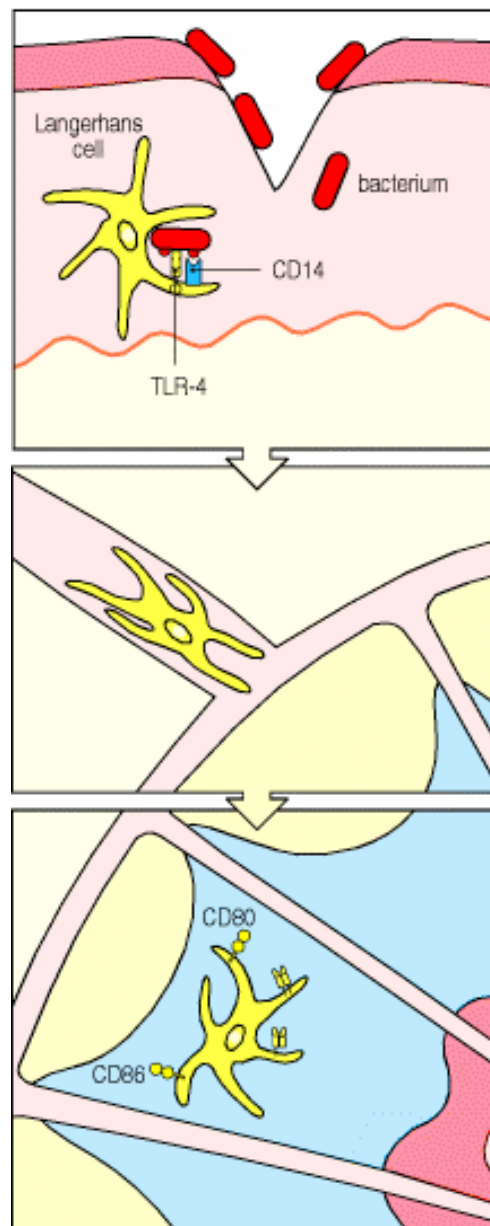


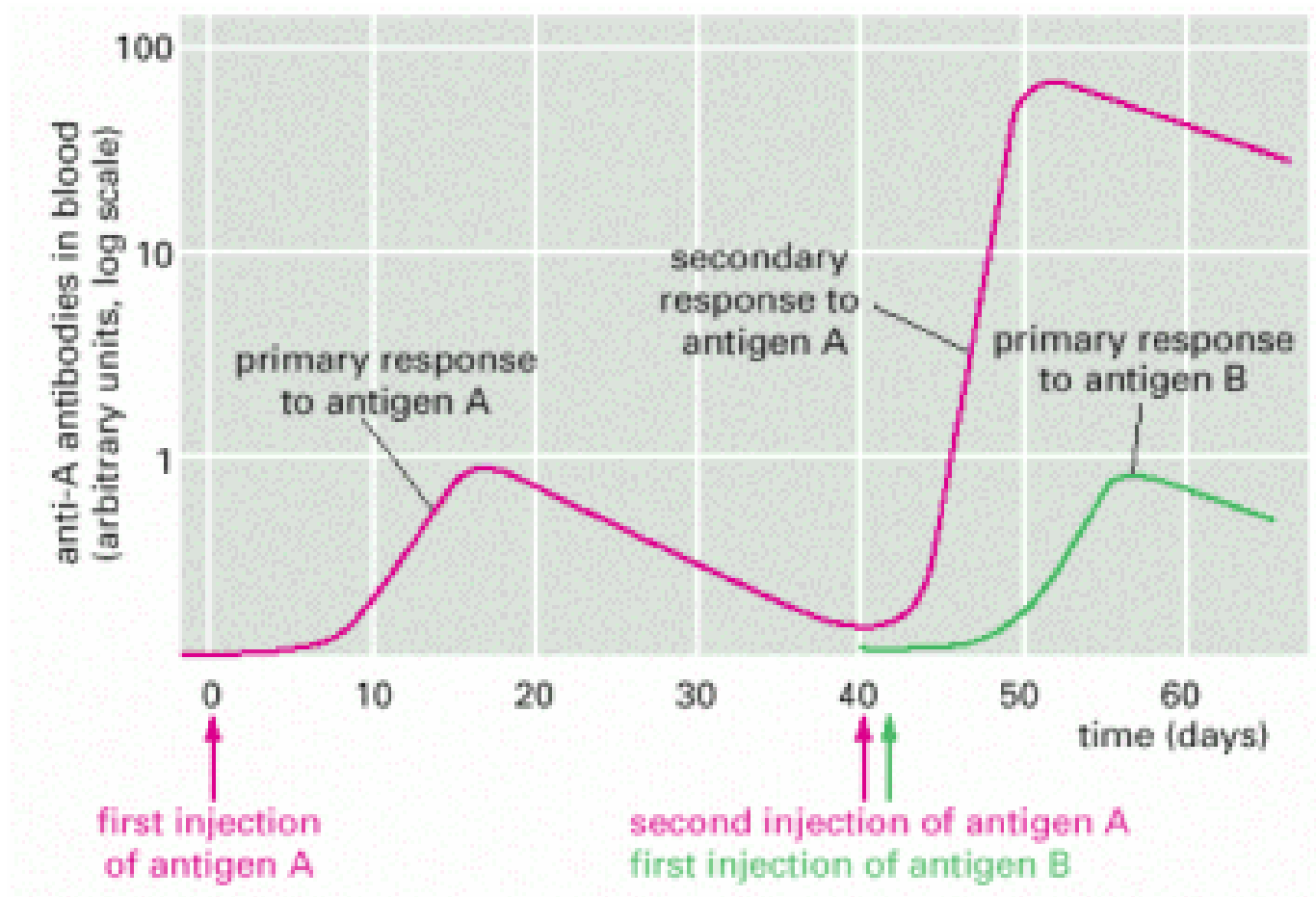
Antigens from infectious agents taken into submucosal lymphoid tissues

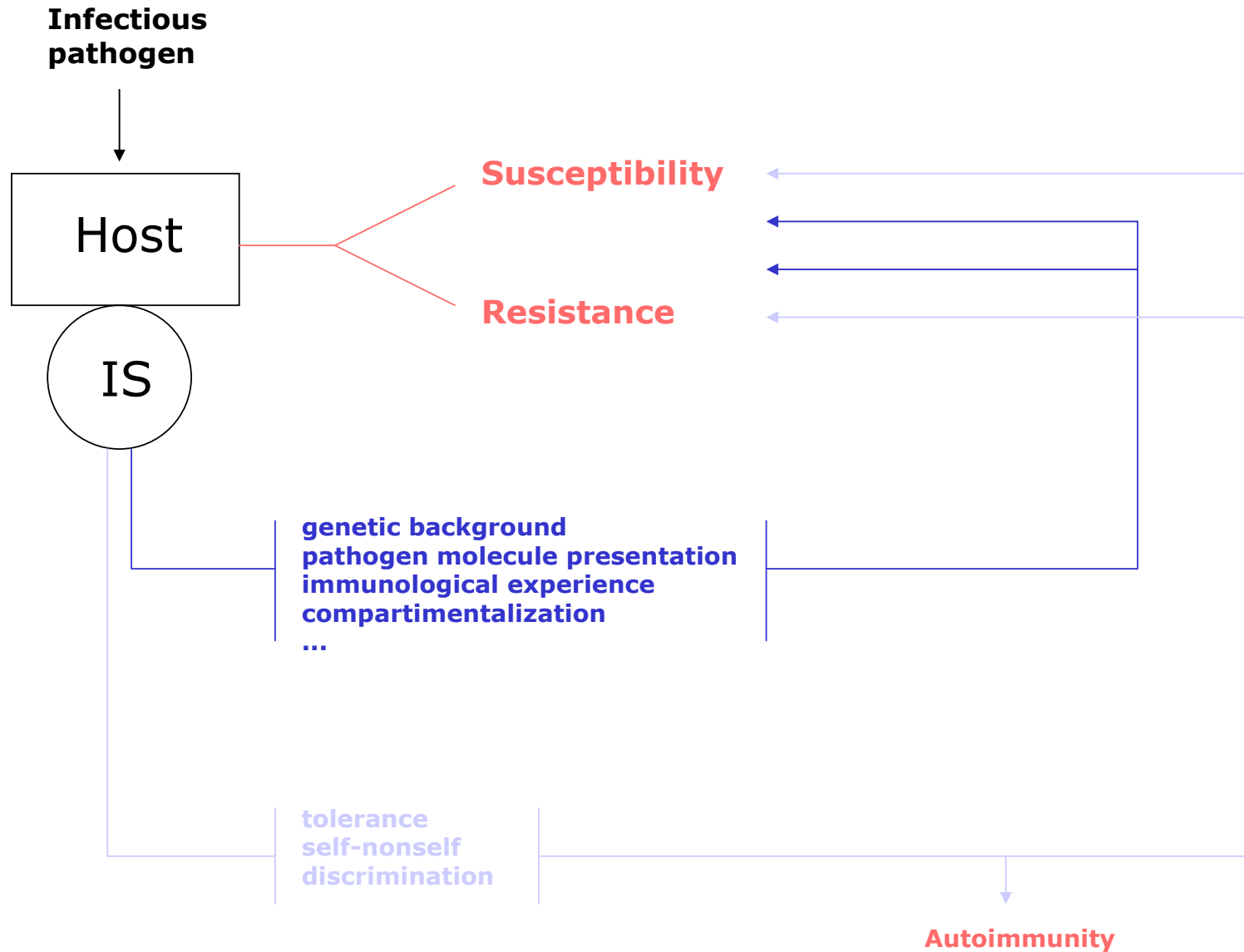












Antigen	Effect of response to antigen	
	Normal response	Deficient response
Infectious agent	Protective immunity	Recurrent infection
Innocuous substance	Allergy	No response
Grafted organ	Rejection	Acceptance
Self organ	Autoimmunity	Self tolerance
Tumor	Tumor immunity	Cancer