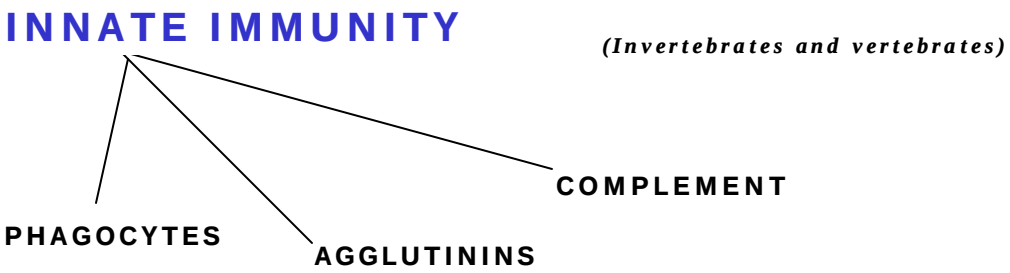
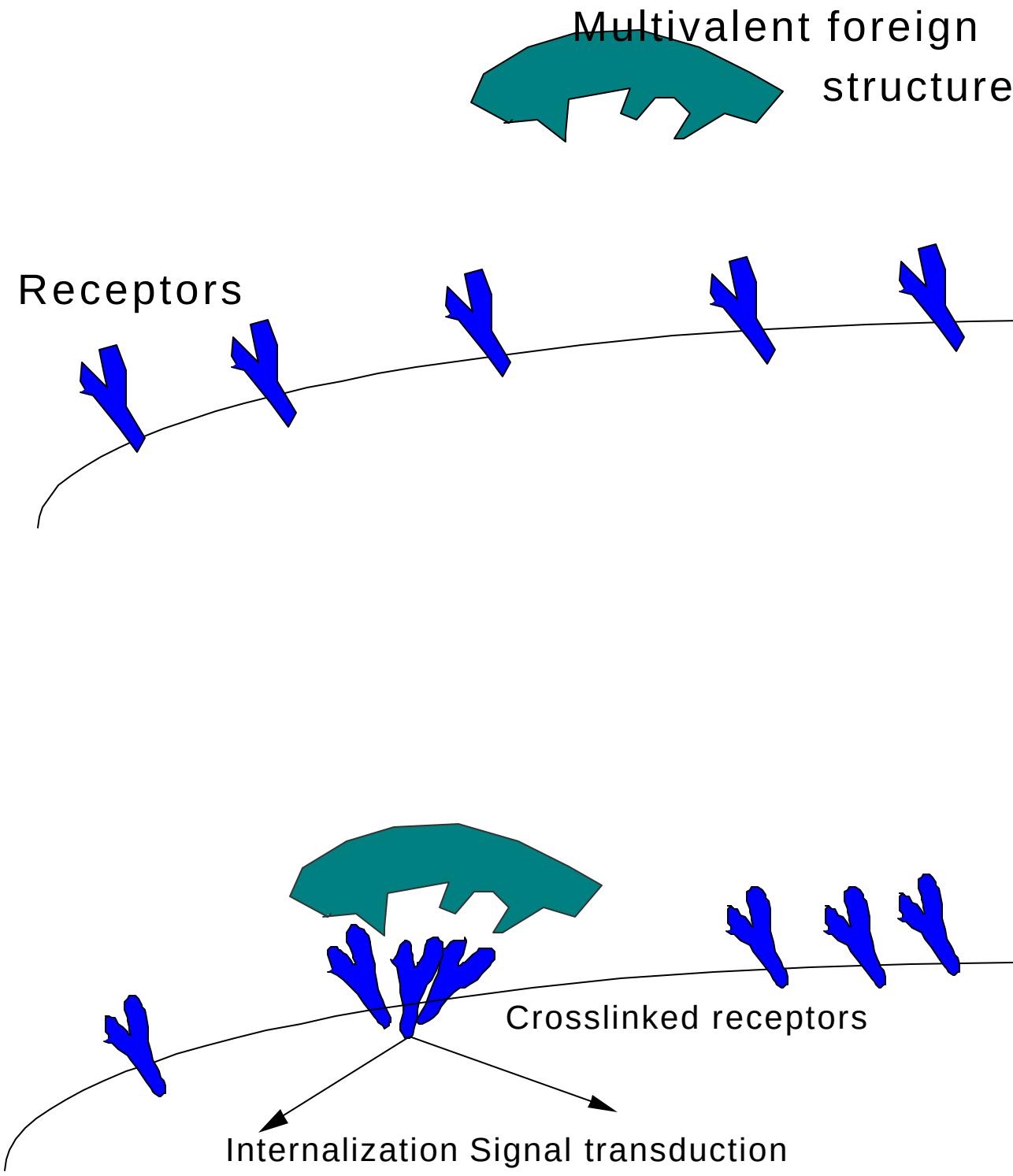
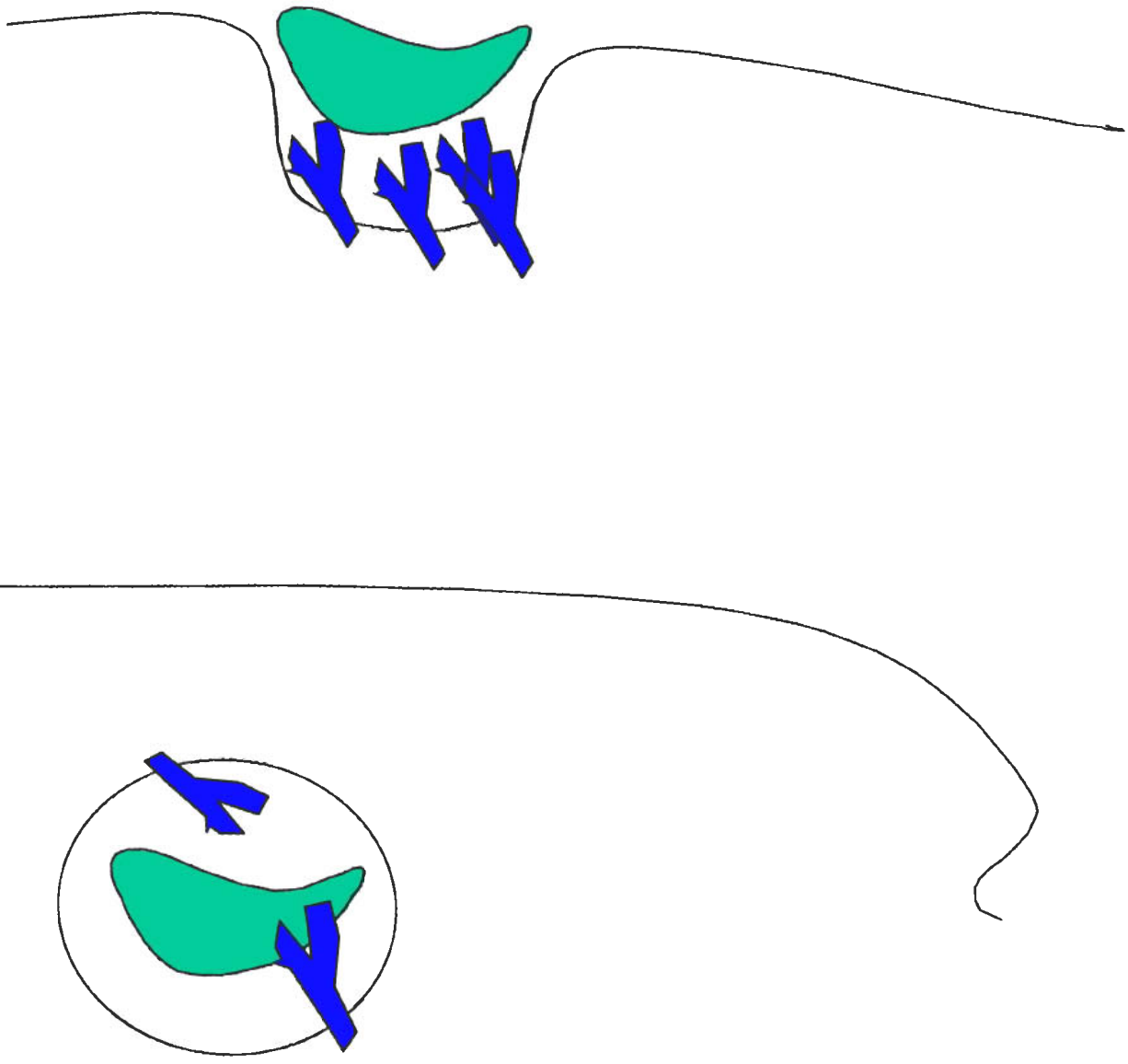


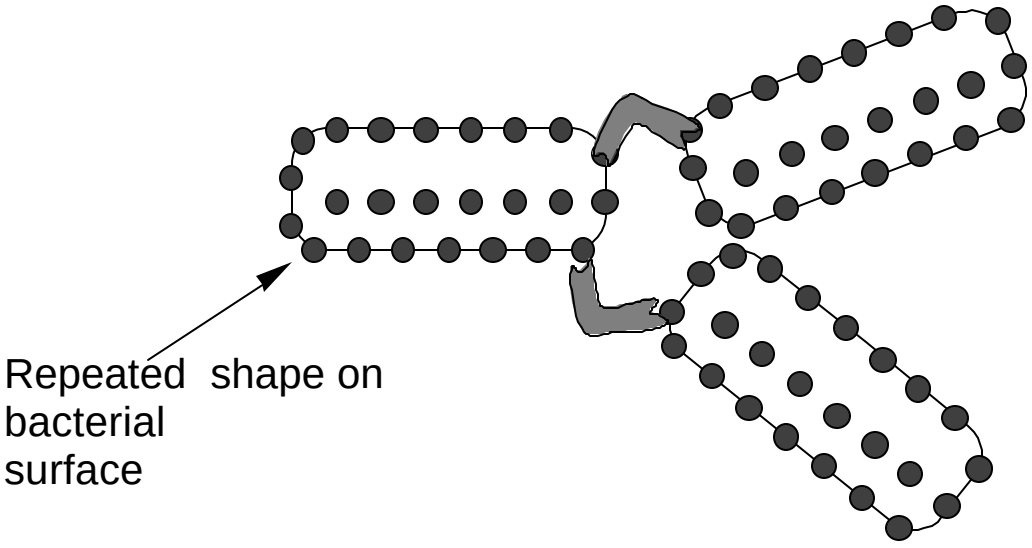
1. Must discriminate between self and non-self

2. Protection by neutralization or destruction of non-self structures


Multivalent foreign structure
Receptors
Crosslinked receptors
Internalization Signal transduction



AGGLUTININS	Neutralize
	Opsonize
	Fix Complement
	Discriminate between self and non-self
	Usually lectins

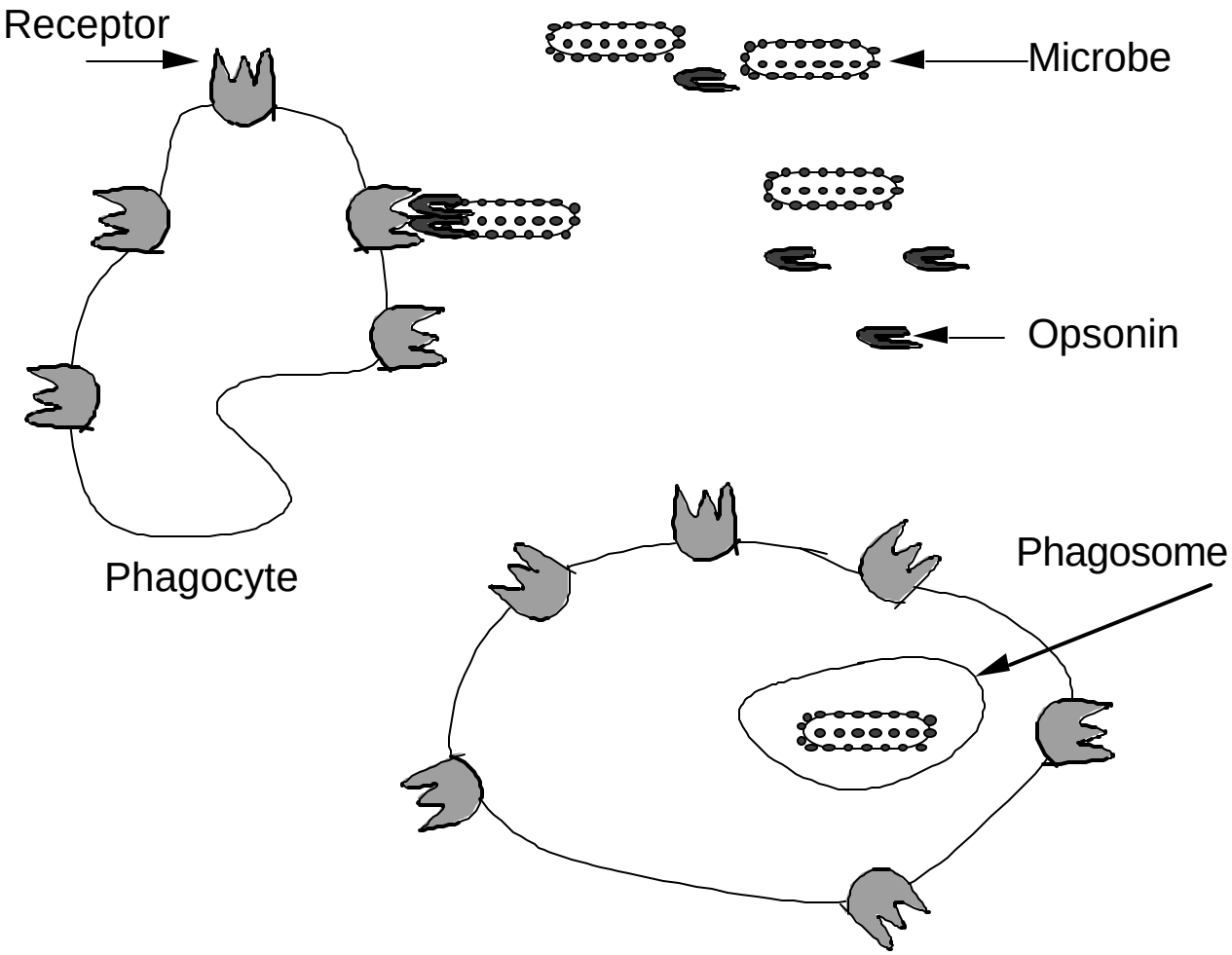


Bivalent protein with binding sites for repeated shape on bacterial surface.

A specific shape which can be recognized by the immune system

may also be called an "epitope" or an "antigenic determinant"

OPSONINS AND OPSONIZATION



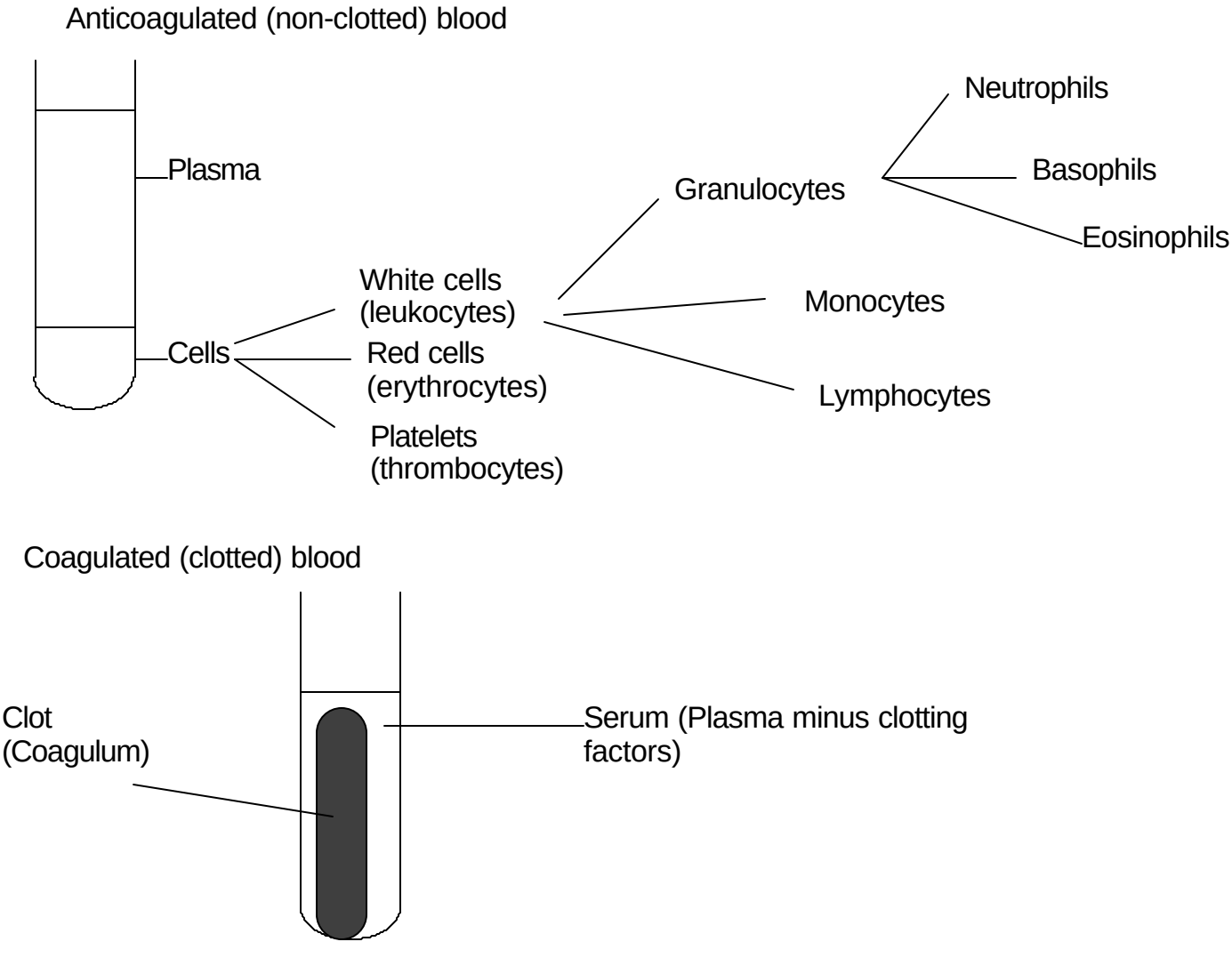
Pattern Recognition Receptors

SPECIFIC/ADAPTIVE IMMUNITY

Generation of Diversity

Self/non-self recognition

Memory

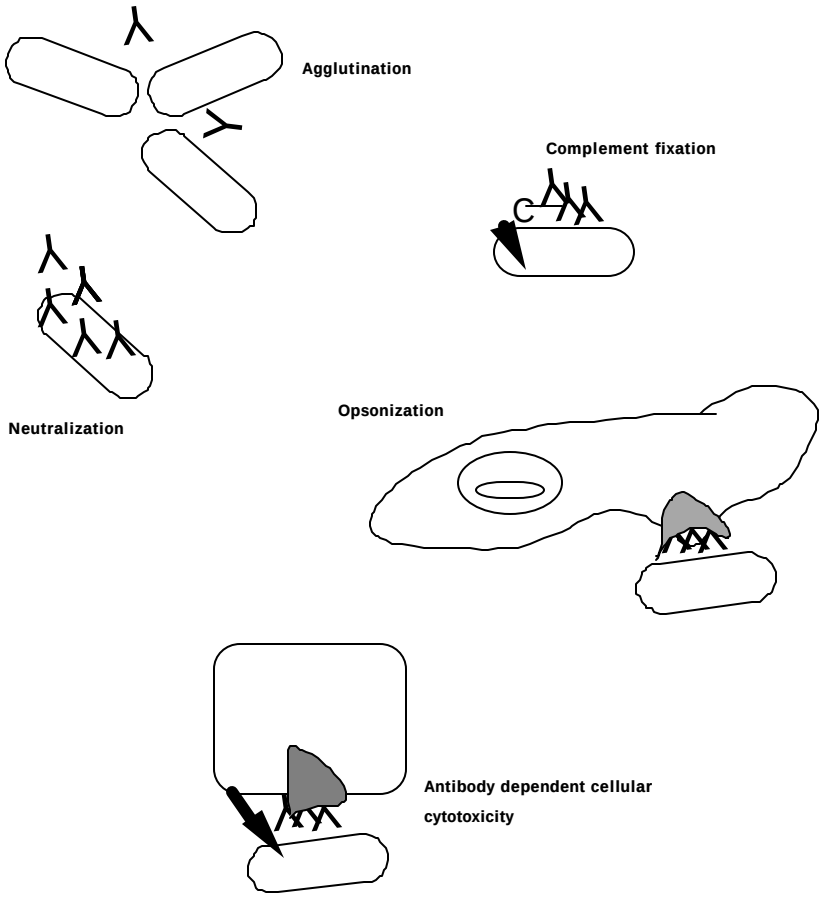

Anticoagulated (non-clotted) blood
Plasma
Cells
White cells
(leukocytes)
Granulocytes
Neutrophils
Basophils
Eosinophils
Monocytes
Lymphocytes
Red cells
(erythrocytes)
Platelets
(thrombocytes)

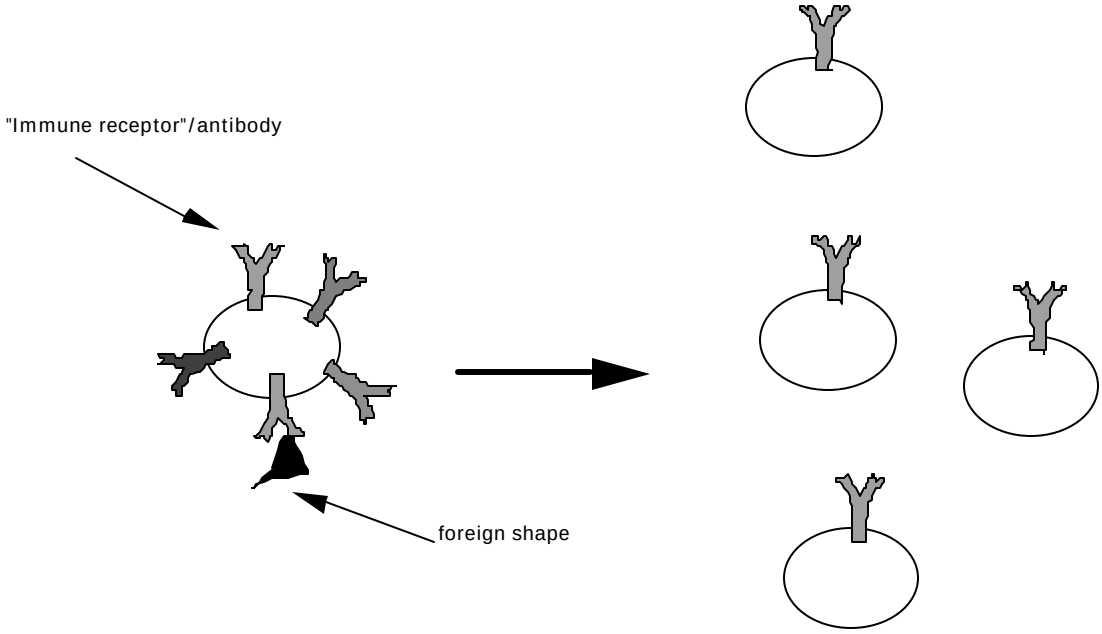
Coagulated (clotted) blood
Clot
(Coagulum)
Serum (Plasma minus clotting
factors)

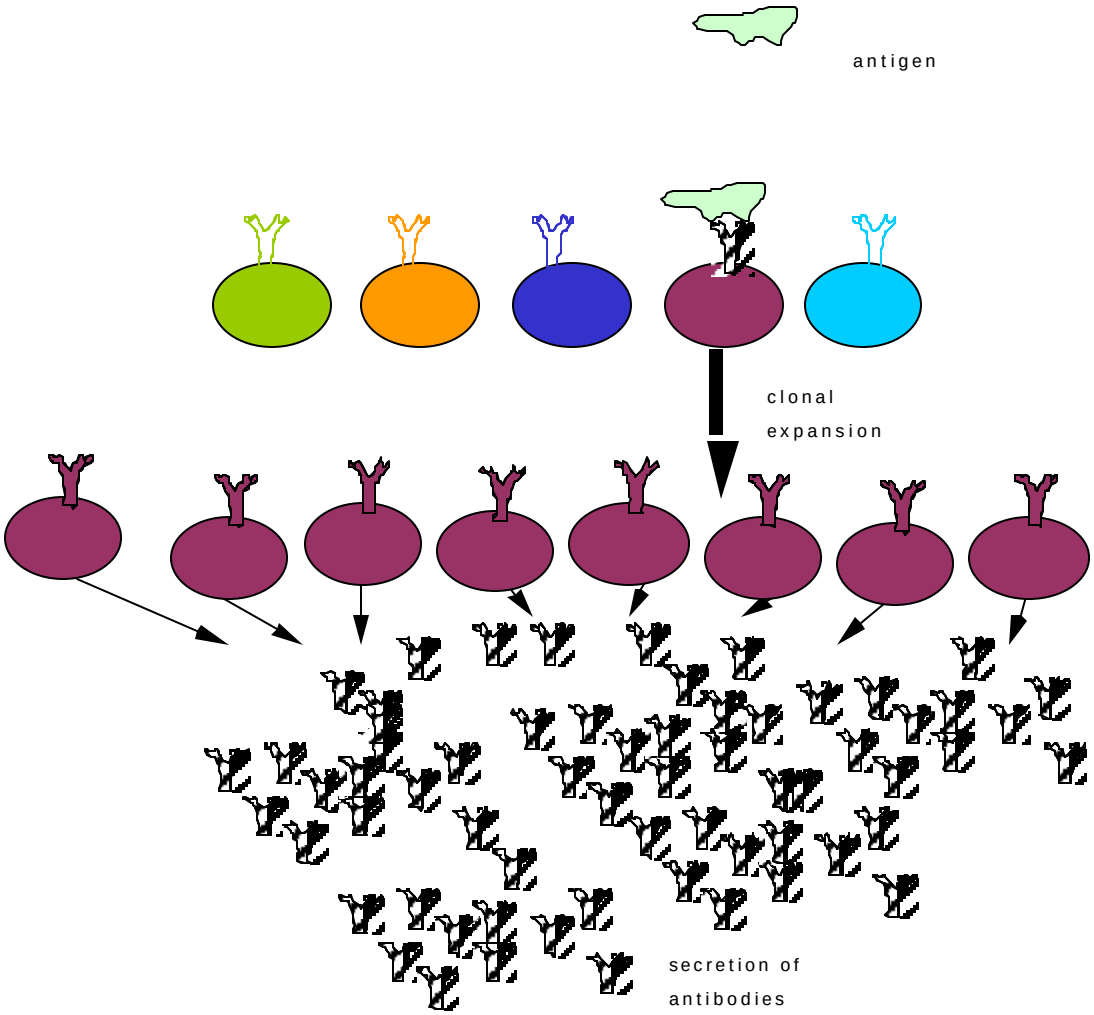
Specific Immunity

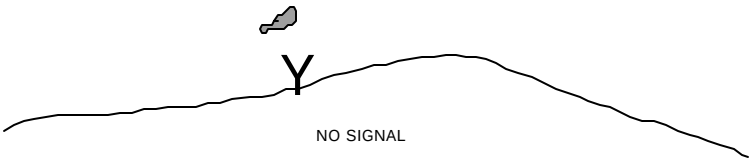
1. Active versus Passive Immunity

2. Humoral versus Cell Mediated Immunity

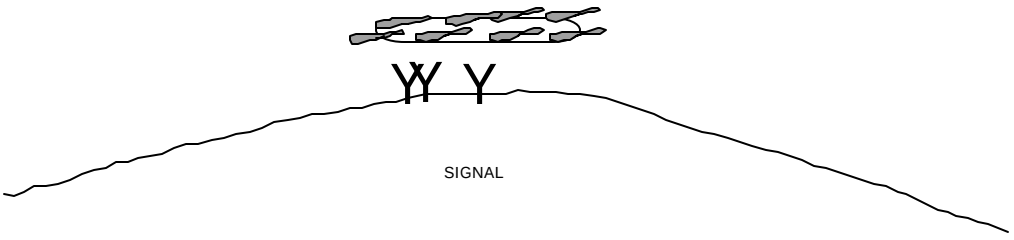

Agglutination
Complement fixation
C
Neutralization
Opsonization
Antibody dependent cellular
cytotoxicity


"Immune receptor"/antibody
foreign shape

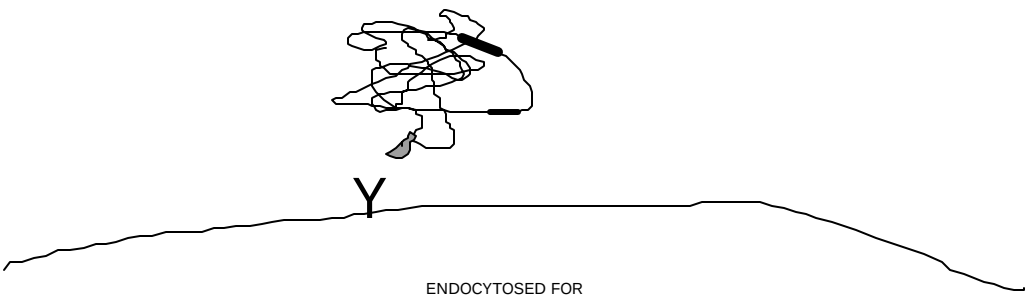

antigen
clonal
expansion
secretion of
antibodies



NO SIGNAL



SIGNAL



ENDOCYTOSED FOR

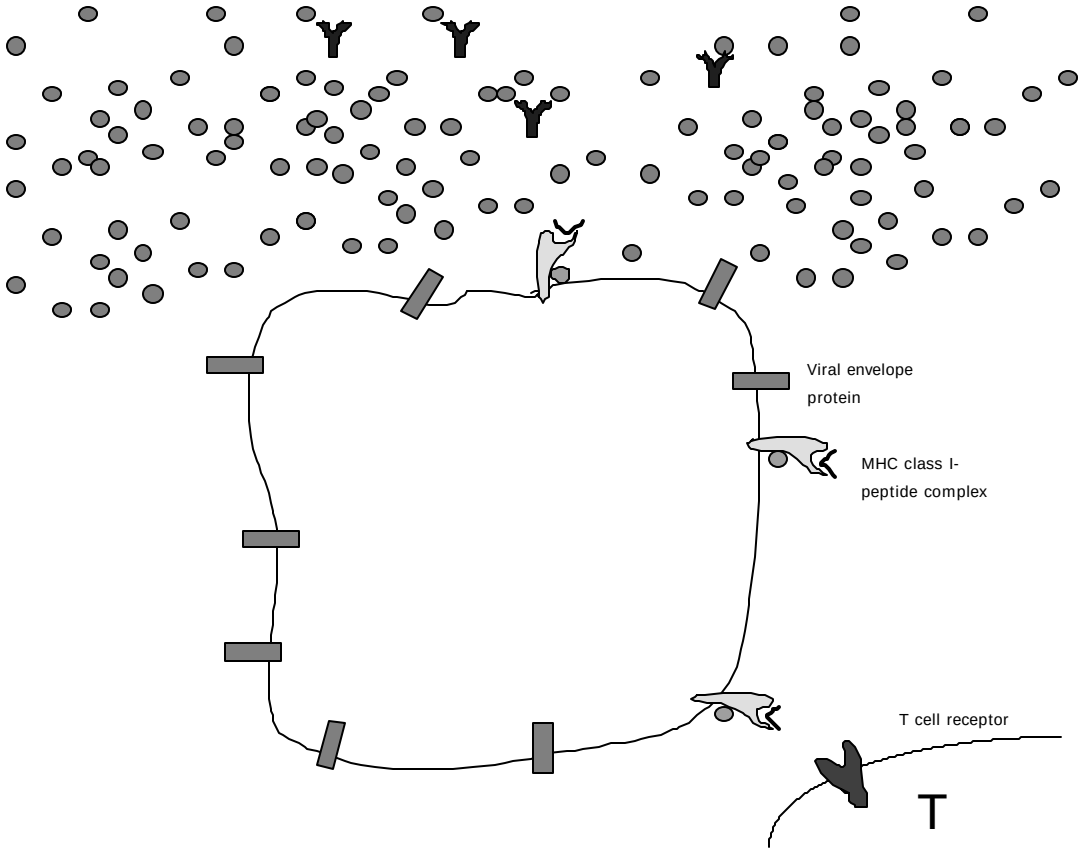
ANTIGEN PRESENTATION

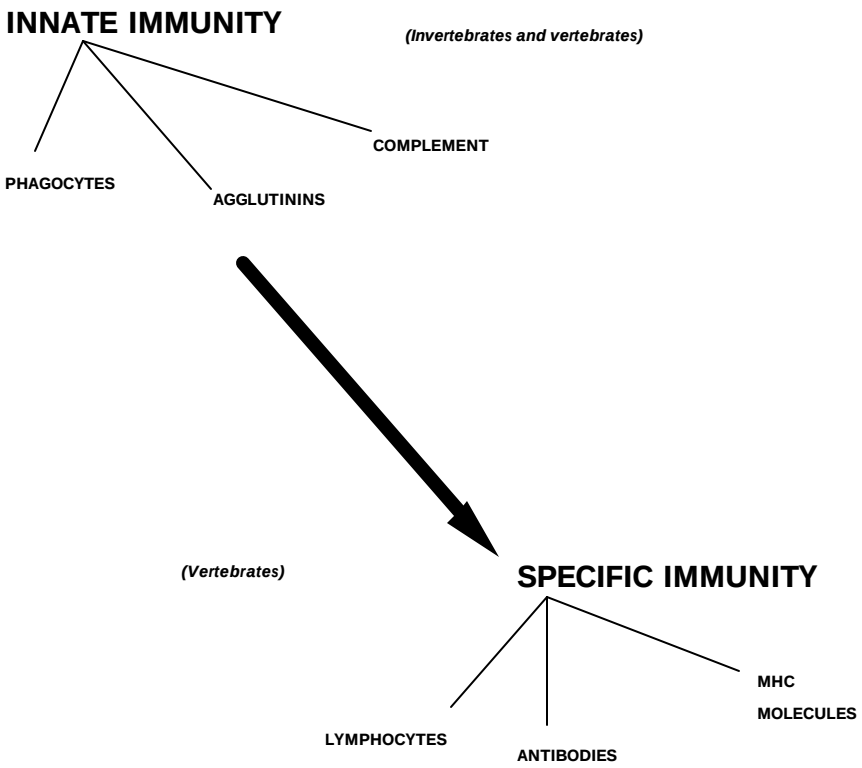
ANTIGENS -II

ALL IMMUNOGENS ARE ANTIGENS

BUT

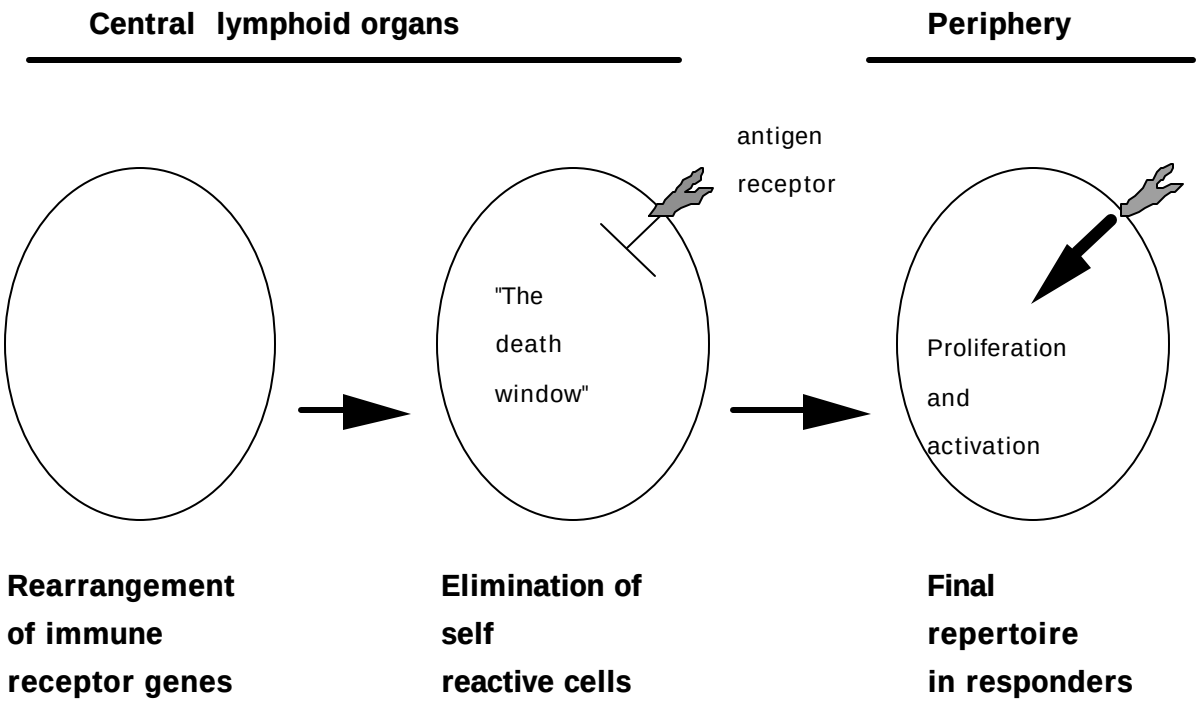
ALL ANTIGENS ARE NOT IMMUNOGENS

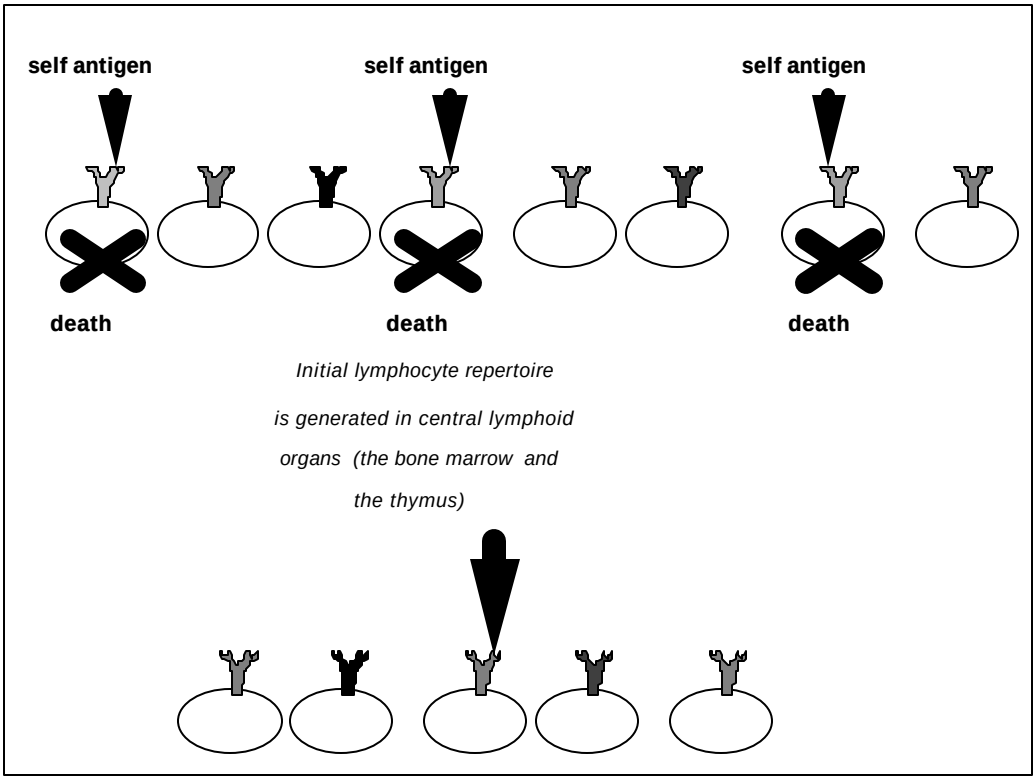

Viral envelope
protein
MHC class I-
peptide complex
T cell receptor
T


INNATE IMMUNITY
(Invertebrates and vertebrates)
COMPLEMENT
PHAGOCYTES
AGGLUTININS
(Vertebrates)
SPECIFIC IMMUNITY
MHC
MOLECULES
LYMPHOCYTES
ANTIBODIES

Generation of Diversity

Self-Nonself Discrimination

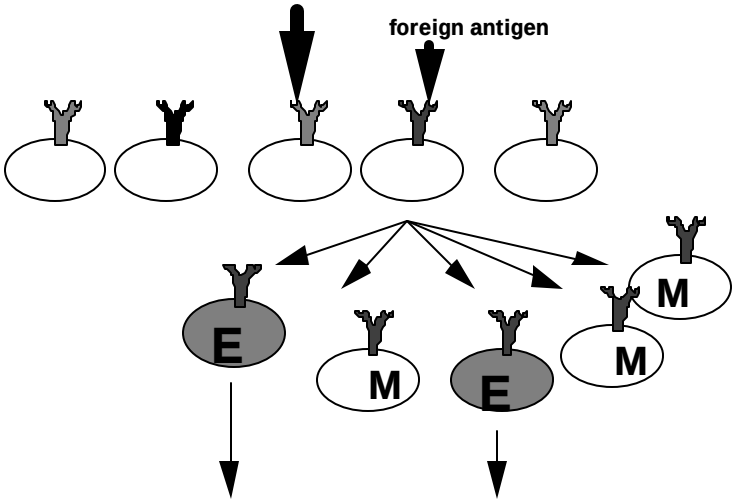

Central lymphoid organs
Periphery
antigen
receptor
"The
death
window"
Proliferation
and
activation
Rearrangement
of immune
receptor genes
Elimination of
self
reactive cells
Final
repertoire
in responders



Immature cells die if stimulated

Initial lymphocyte repertoire is generated in central lymphoid organs (the bone marrow and the thymus)

After deletion of self reactive lymphocytes mature cells migrate to peripheral lymphoid organs



Mature cells proliferate and differentiate if stimulated

Some activated cells exhibit memory (M) while others are revved up immune effectors (E)

Effectors acquire the ability to leave lymph nodes and enter the tissues which contain the foreign antigen which they will zap or mop up