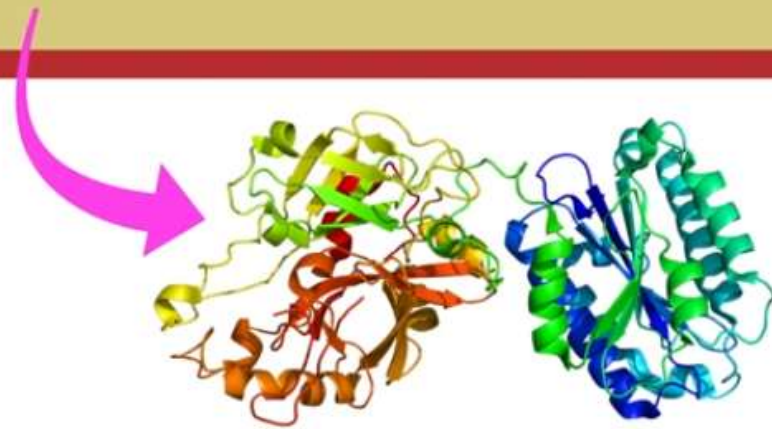


10.	The complement system: classical and alternative pathways
11.	Major Histocompatibility Complex: genetic organization of H2 and HLA complexes. Class I and class II MHC molecules, structure and function. Antigen processing and presentation pathways
12.	Differentiation and activation of B cells, BCR and pre BCR, receptor editing, T cell help
13.	T cell receptors, $\alpha\beta$ and $\gamma\delta$ T cells, receptor diversity. Activation of T cells, APC-T cell interaction, Th1/Th2 cells and cytokines. T cell differentiation in thymus, thymic selection and tolerance to self, MHC restriction, super antigens
14.	Cell – mediated effect or functions: Cytotoxic T cells, Natural Killer Cells, ADCC, NK cell receptors, inverse correlation with target MHC expression, missing self hypothesis, cytotoxicity reaction
15.	Topics like Applications of immunological principles (vaccines, and diagnostics) tumor and transplantation Immunology, and diseases of relevance to the immune system (autoimmunity and immunodeficiency) etc. would be discussed in context of the basic immunological mechanisms as assignments/tutorials

mammalian complement system

a collection of **proteins** that circulate in the blood



zymogens

mammalian complement system

a collection of **proteins** that circulate in the blood



Complement System Nomenclature

- 1) there are **9** main complement proteins
- 2) named with a **C** followed by a **number**
- 3) once cleaved products are given an **a** or **b**
 - the a fragment is the smaller **anaphylatoxin**
 - the b fragment is the larger **binding portion**
 - C2 is the **exception** to the above



Complement System Nomenclature

4) fragments complex together to form **enzymes**

- when naming a protein complex its fragments are listed in the **order in which they bind**

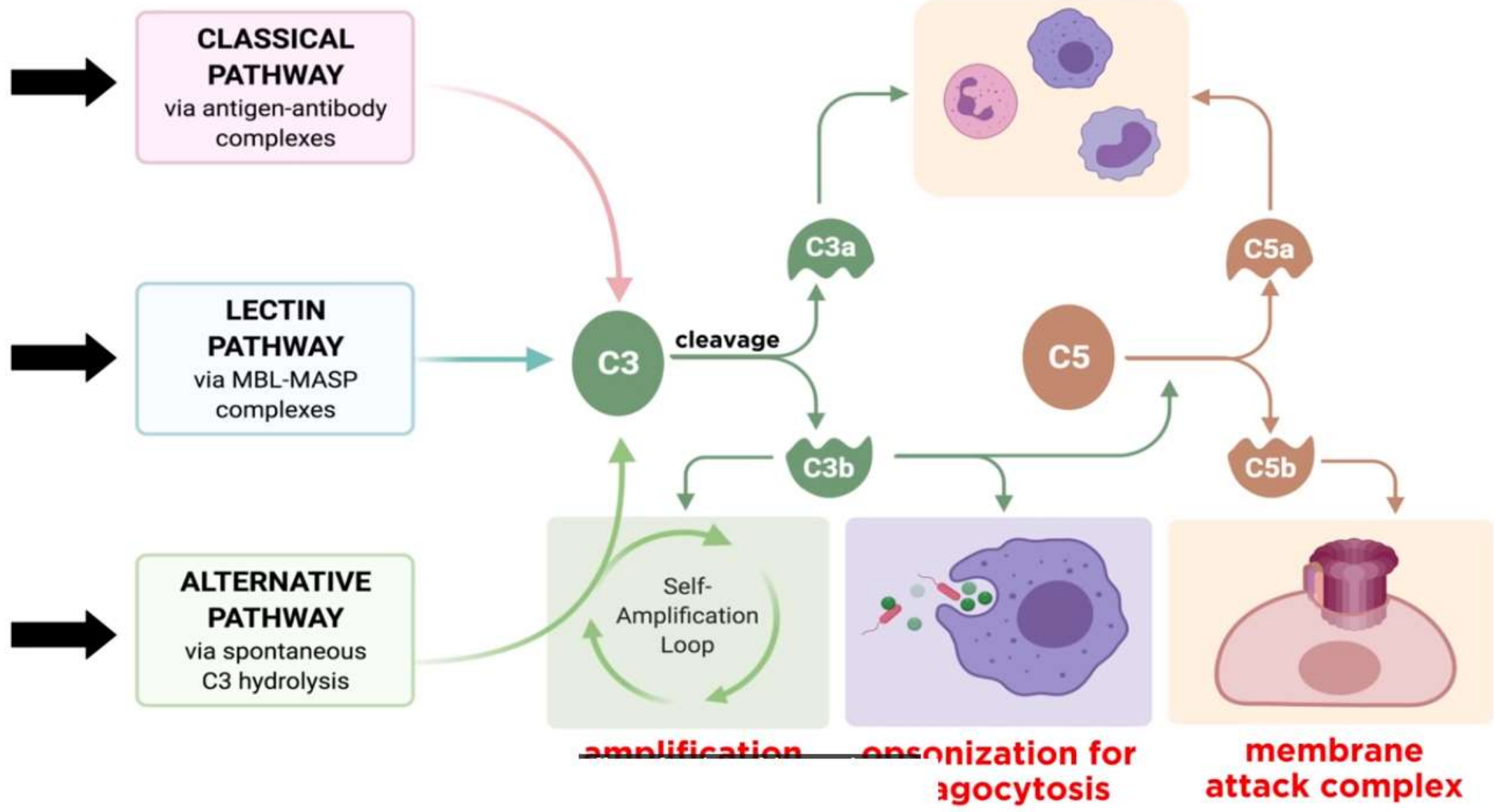
C3 convertase = C4b2a = C4b + C2a

C3b + C4b2a → C5 convertase = C4b2a3b

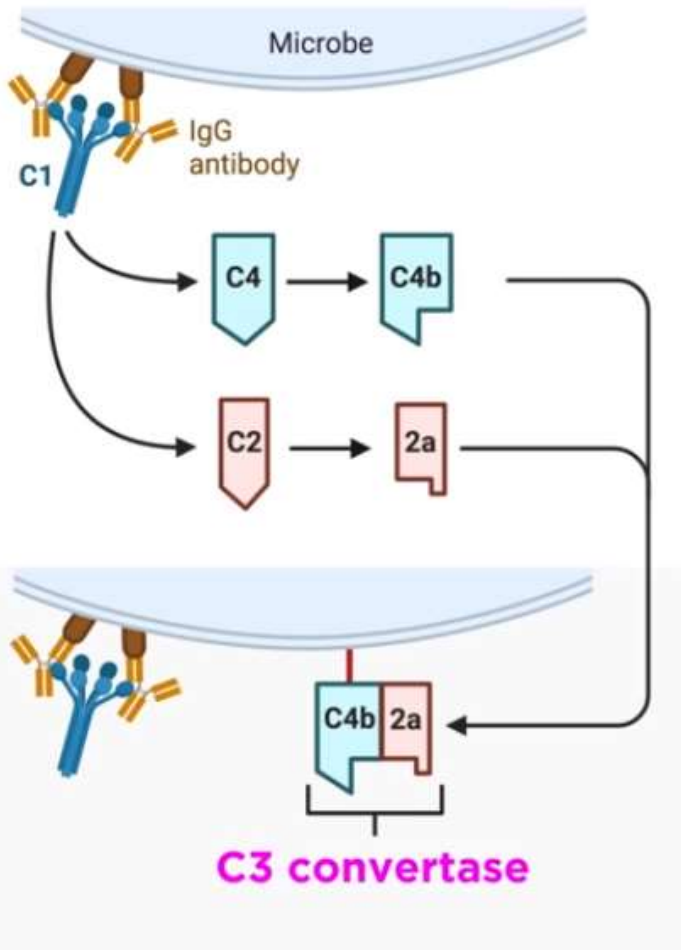
5) some sources have swapped **C2a** and **C2b**

The Complement System

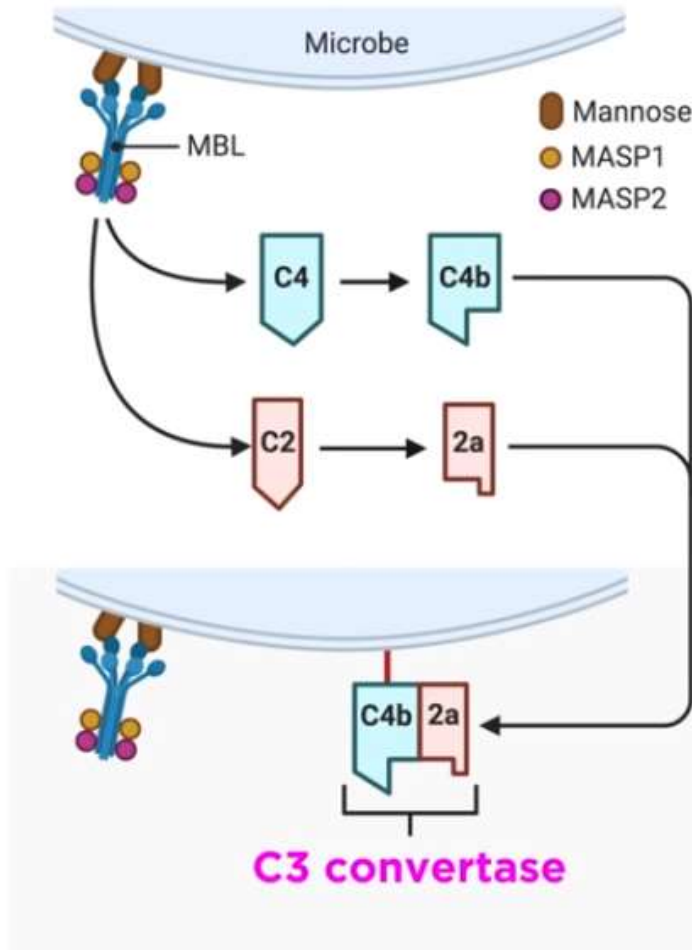
anaphylatoxins recruit neutrophils and monocytes



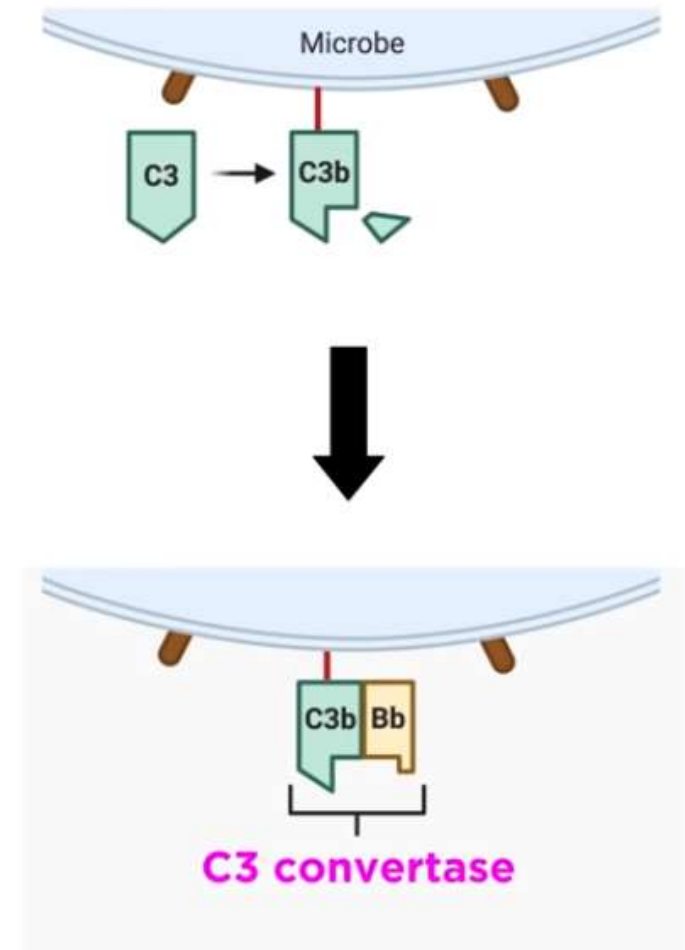
Classical



Lectin



Alternative



The Complement System

recruit neutrophils and monocytes

CLASSICAL PATHWAY
via antigen-antibody complexes

LECTIN PATHWAY
via MBL-MASP complexes

ALTERNATIVE PATHWAY
via spontaneous C3 hydrolysis

