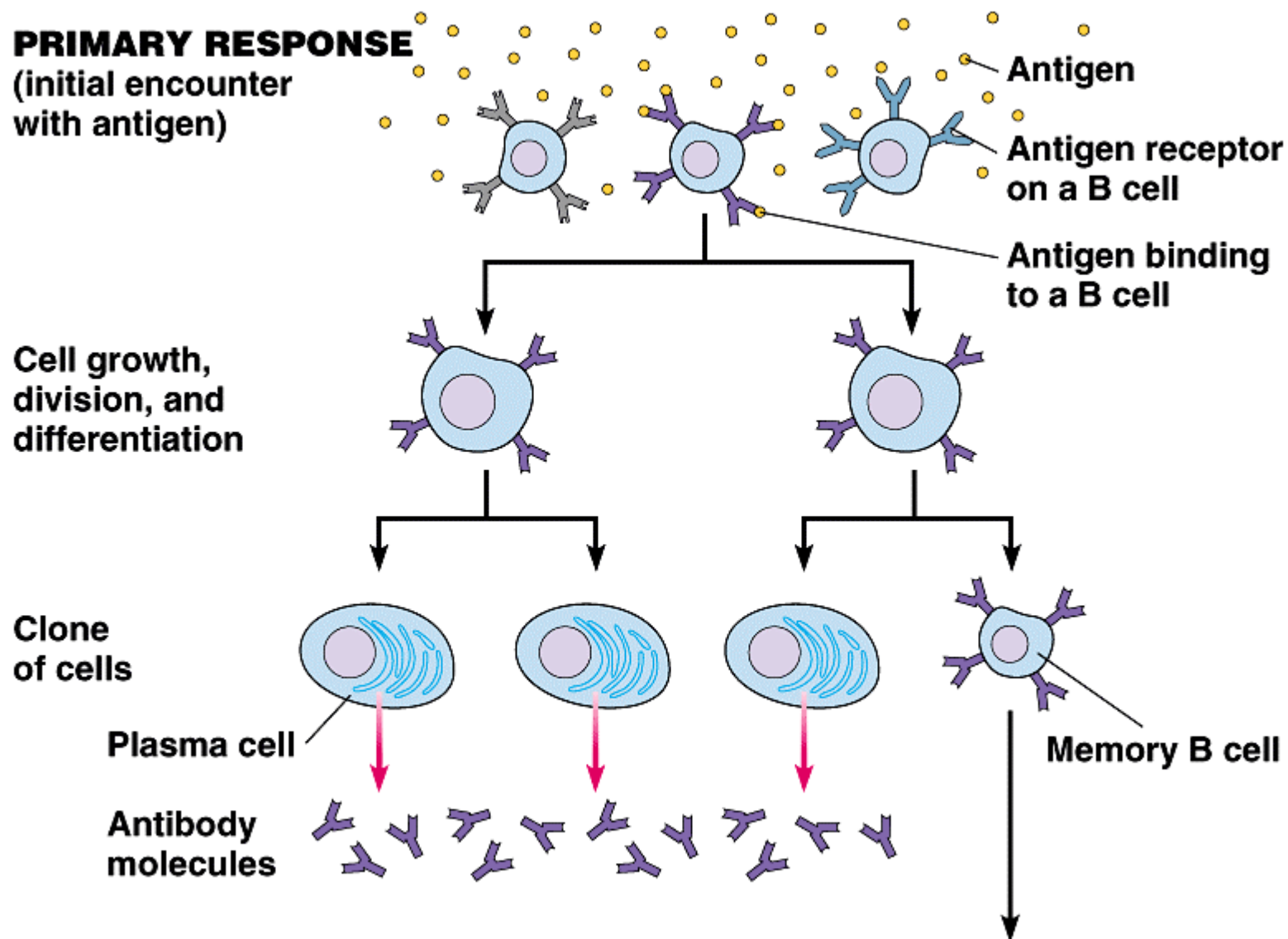


PRIMARY RESPONSE
(initial encounter
with antigen)



SECONDARY RESPONSE (can be years later)

Cell growth,
division, and further
differentiation

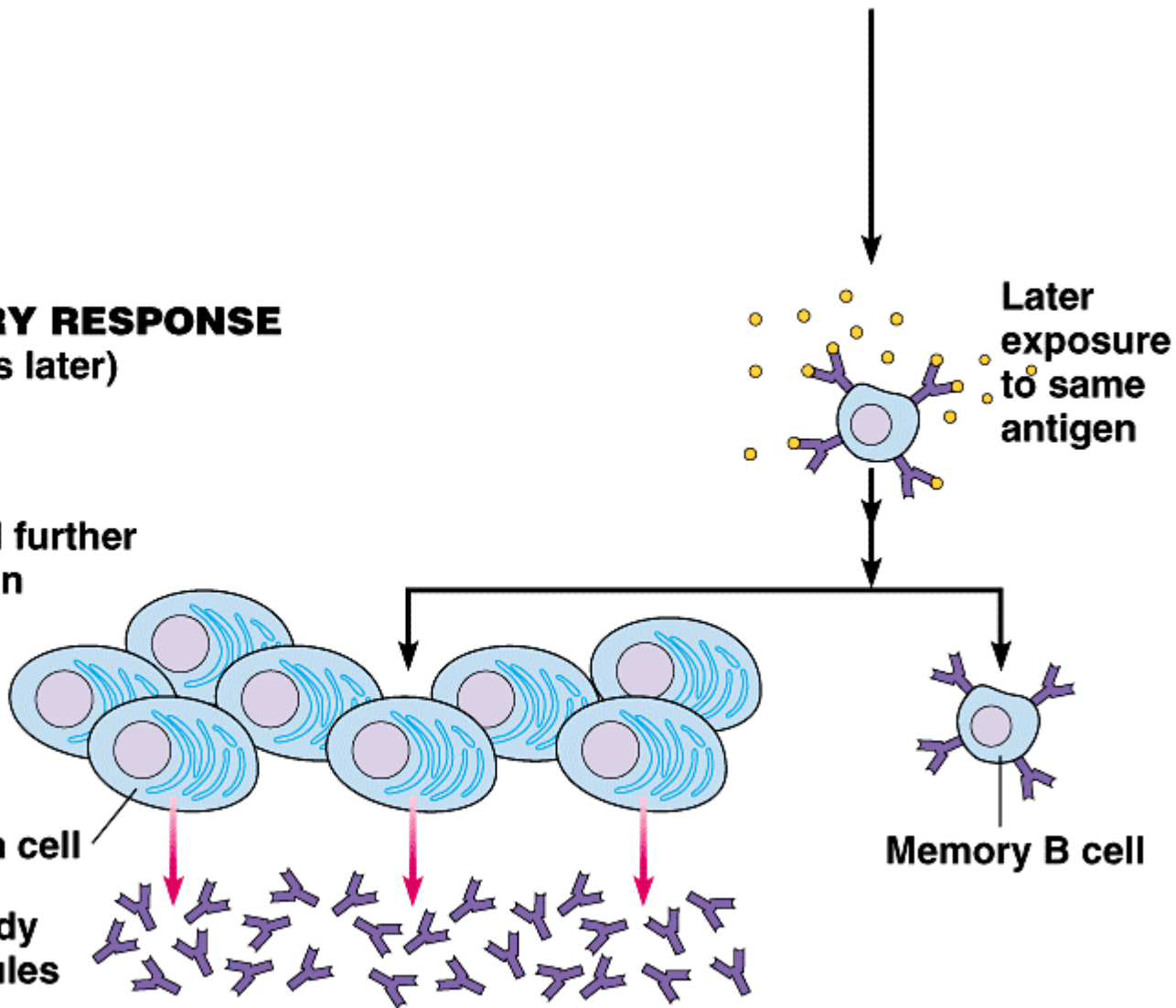
Larger clone
of cells

Plasma cell

Antibody
molecules

Later
exposure
to same
antigen

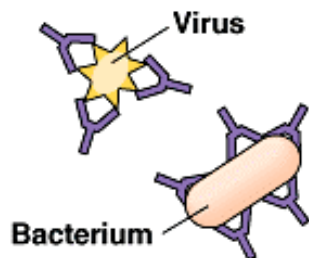
Memory B cell



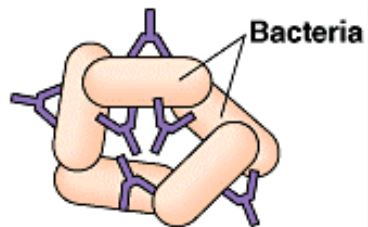
The Action of Antibodies (Focus on “Agglutination”)

**Binding of antibodies to antigens
inactivates antigens by**

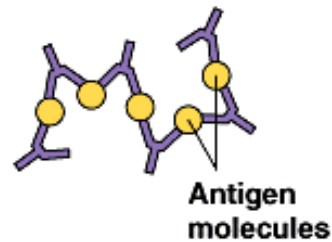
**Neutralization
(blocks viral binding sites;
coats bacterial toxins)**



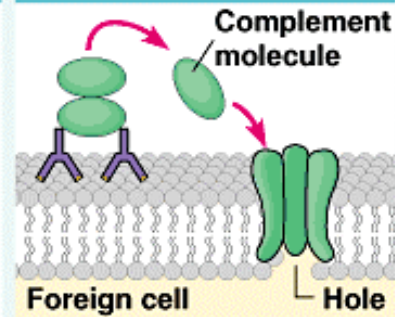
**Agglutination
of microbes**



**Precipitation of
dissolved antigens**

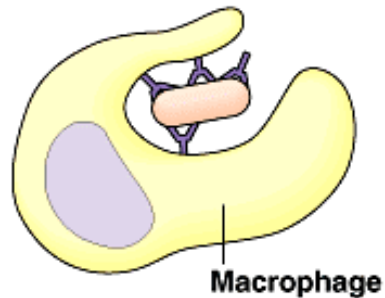


**Activation
of complement**



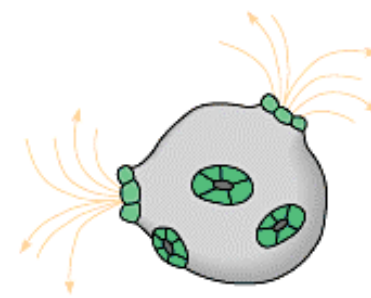
Enhances

Phagocytosis

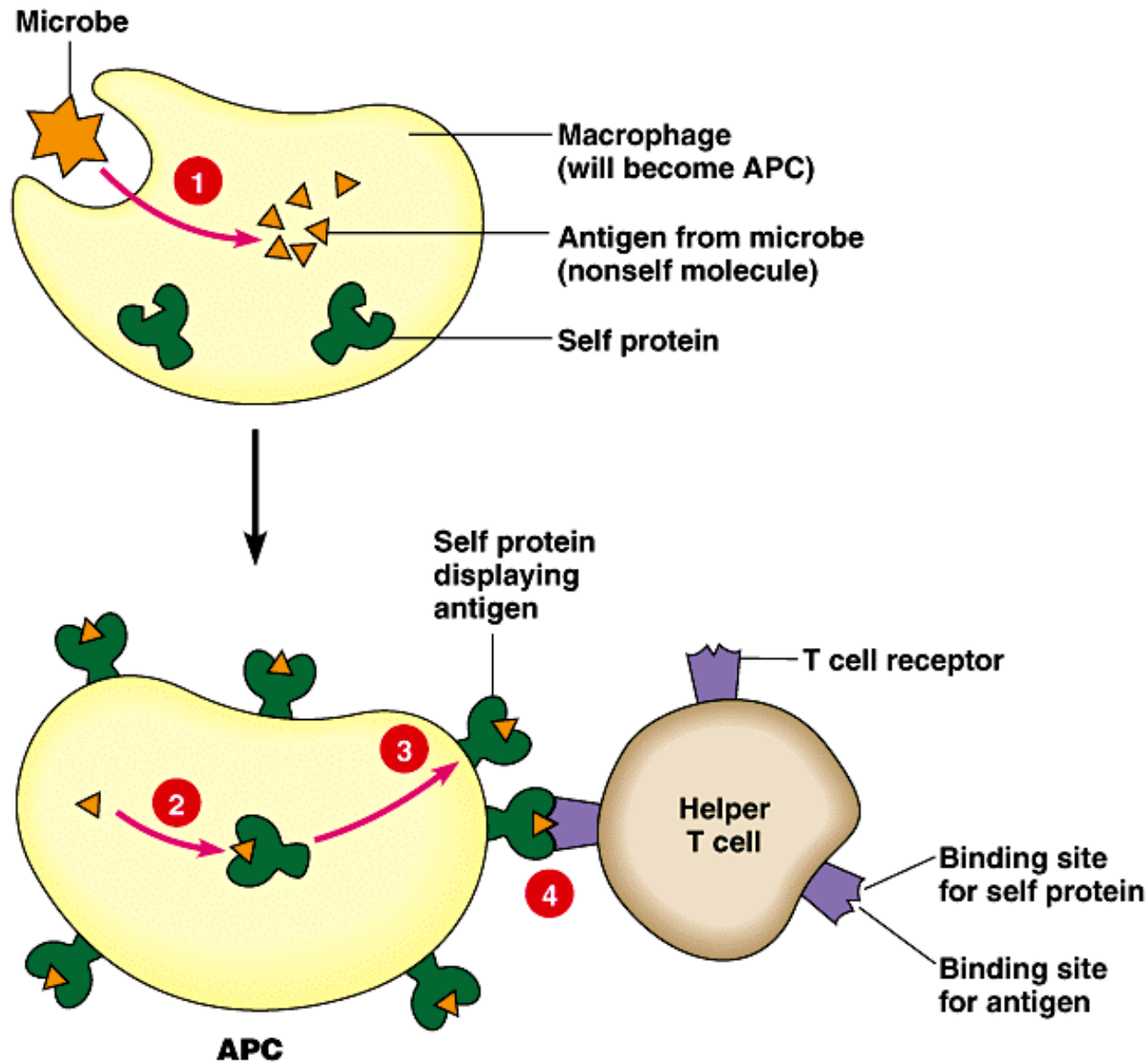


Leads to

Cell lysis

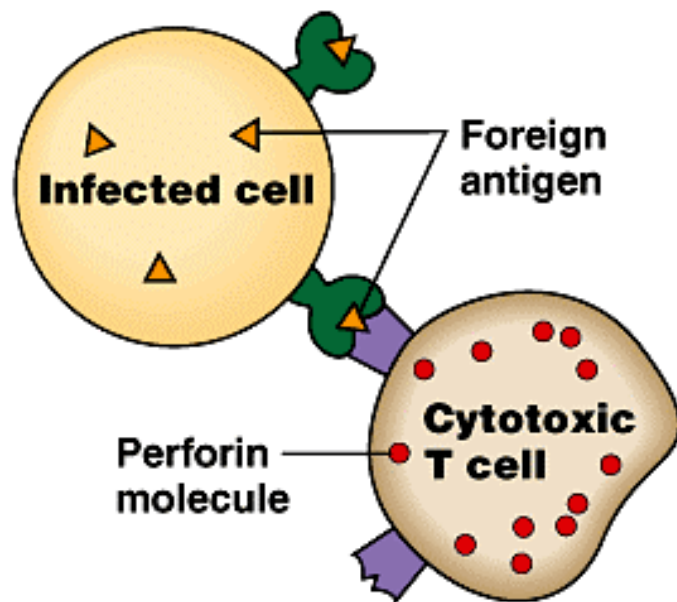


The Development of an Antigen-Presenting Cell and Its Interaction with a Helper T-cell

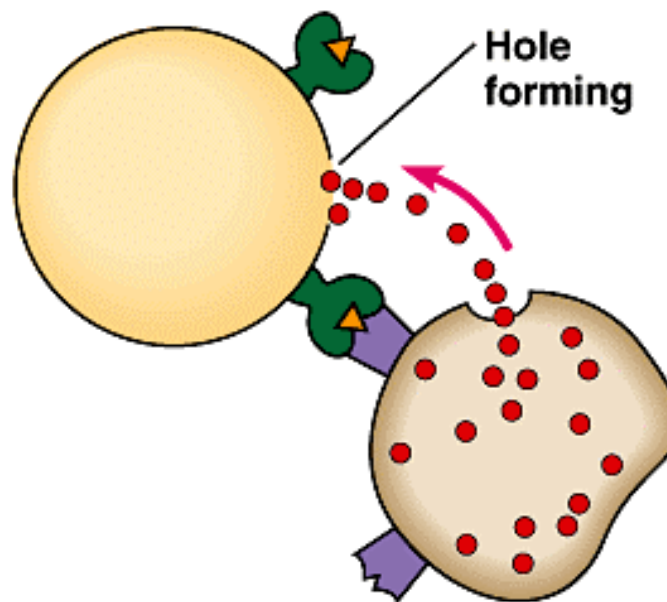


How a Cytotoxic T-cell Kills an Infected Cell

- 1** Cytotoxic T cell binds to infected cell



- 2** Perforin makes holes in infected cell's membrane



- 3** Infected cell is destroyed

