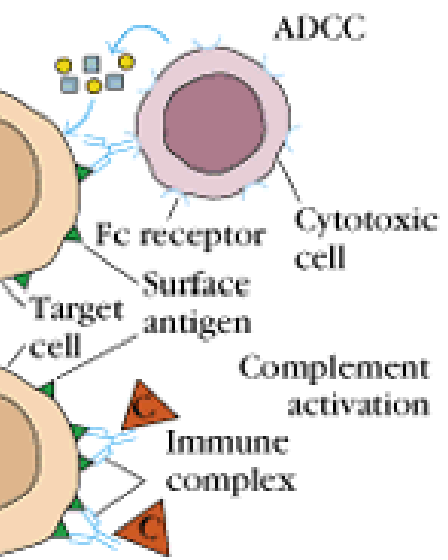
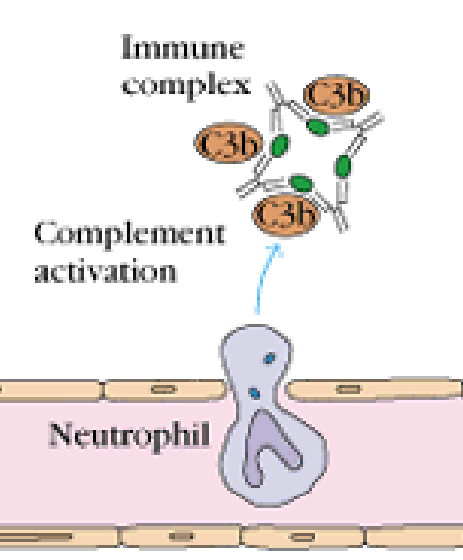
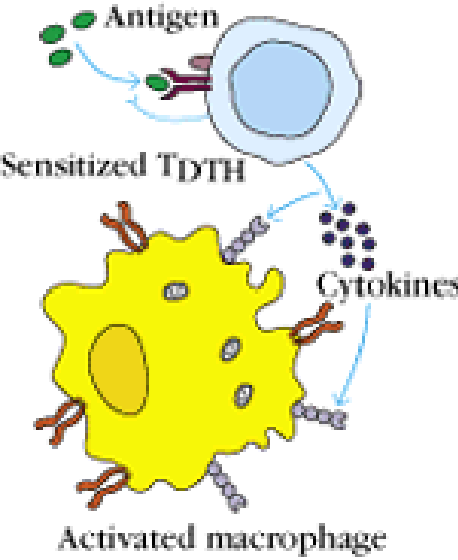
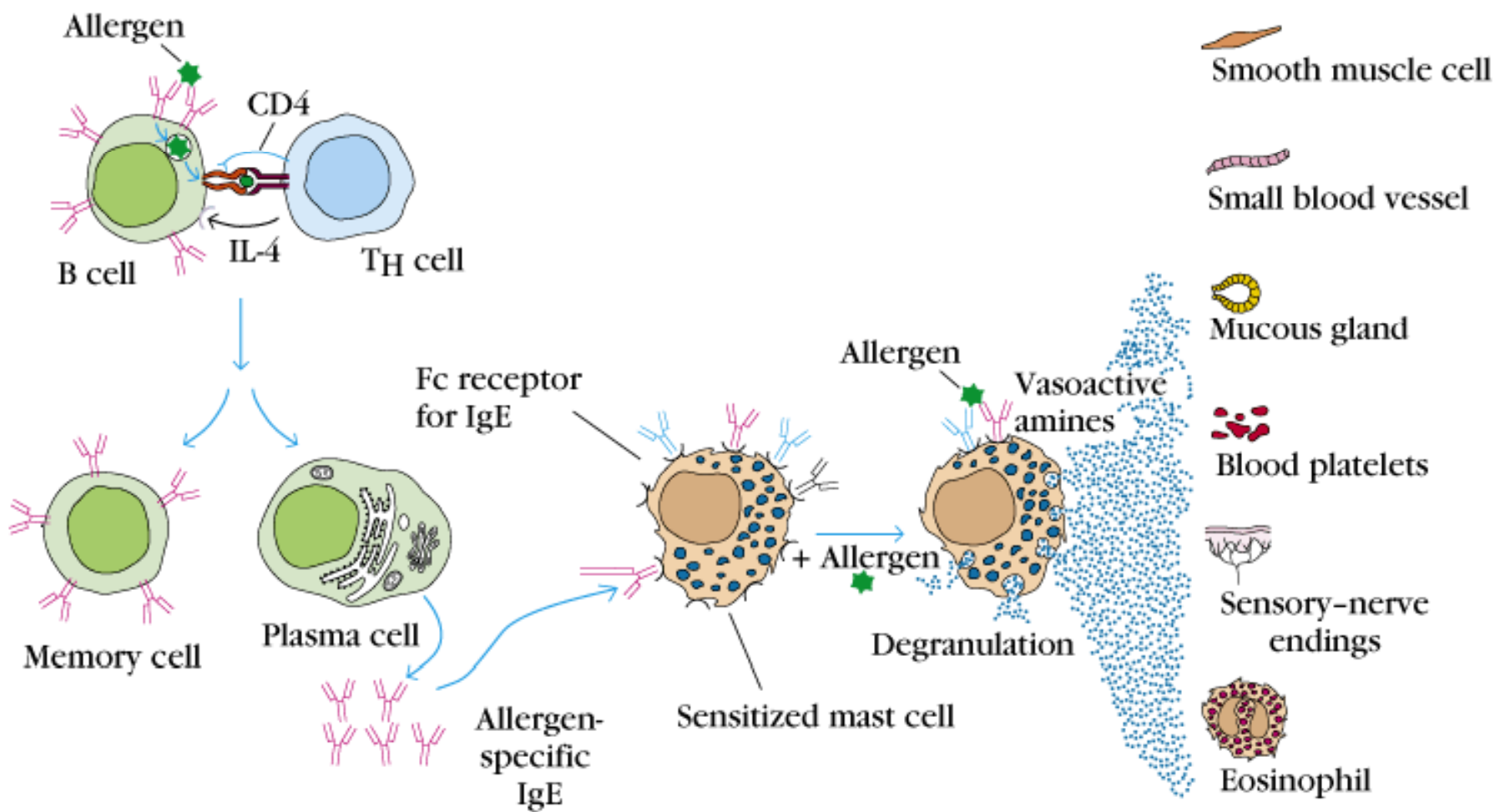
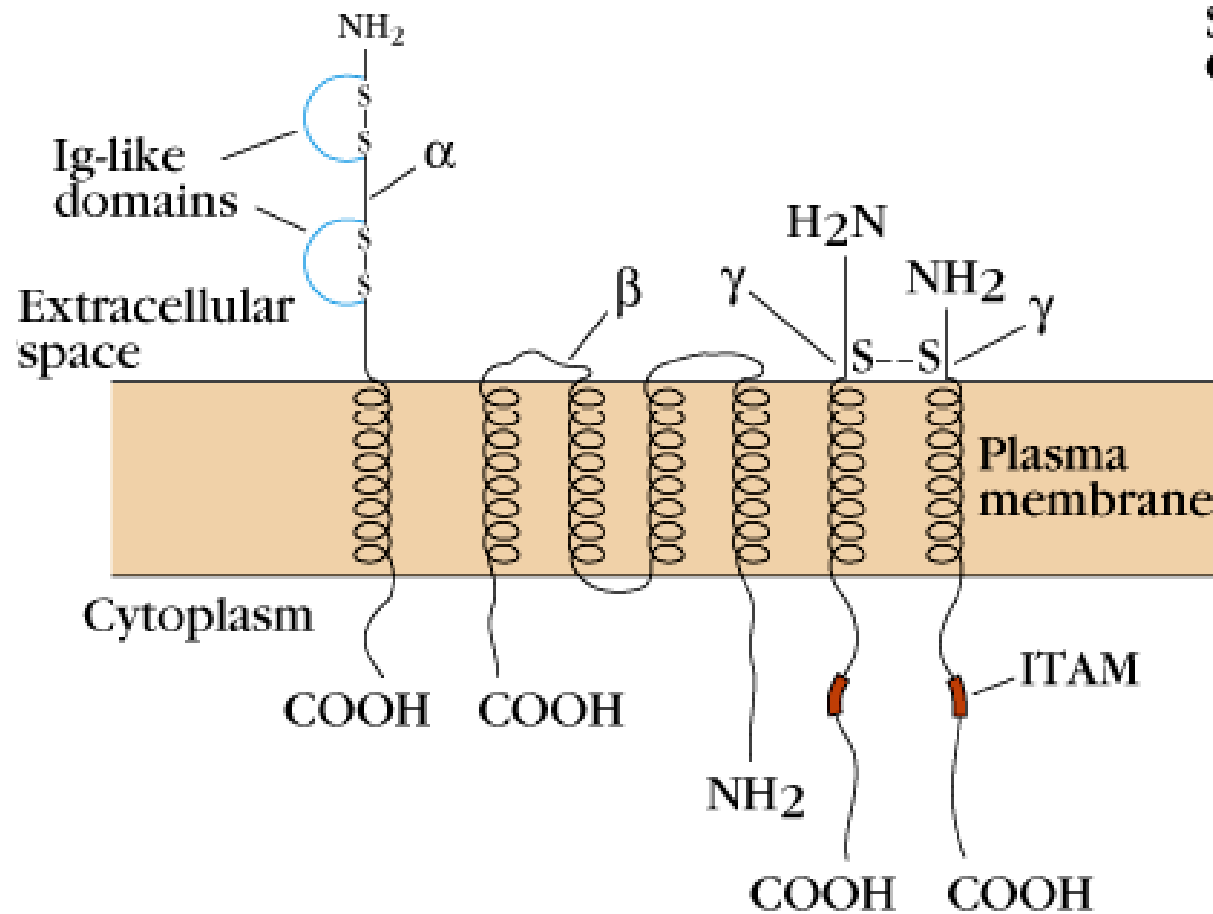
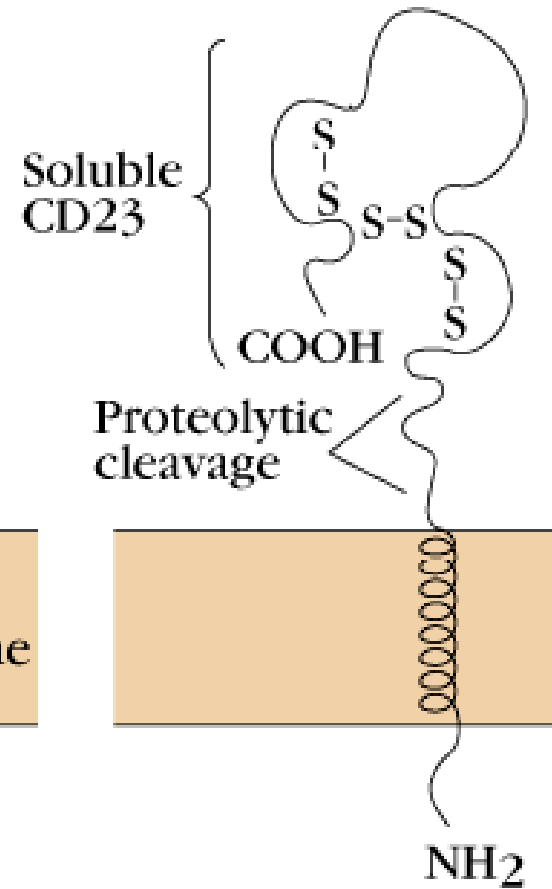
 <p><b>Type I</b></p>	 <p><b>Type II</b></p>	 <p><b>Type III</b></p>	 <p><b>Type IV</b></p>
<p>IgE-Mediated Hypersensitivity</p>	<p>IgG-Mediated Cytotoxic Hypersensitivity</p>	<p>Immune Complex-Mediated Hypersensitivity</p>	<p>Cell-Mediated Hypersensitivity</p>
<p>Ag induces crosslinking of IgE bound to mast cells and basophils with release of vasoactive mediators</p>	<p>Ab directed against cell surface antigens mediates cell destruction via complement activation or ADCC</p>	<p>Ag-Ab complexes deposited in various tissues induce complement activation and an ensuing inflammatory response mediated by massive infiltration of neutrophils</p>	<p>Sensitized T<sub>DTH</sub> cells release cytokines that activate macrophages or T<sub>C</sub> cells which mediate direct cellular damage</p>
<p>Typical manifestations include systemic anaphylaxis and localized anaphylaxis such as hay fever, asthma, hives, food allergies, and eczema</p>	<p>Typical manifestations include blood transfusion reactions, erythroblastosis fetalis, and autoimmune hemolytic anemia</p>	<p>Typical manifestations include localized Arthus reaction and generalized reactions such as serum sickness, necrotizing vasculitis, glomerulonephritis, rheumatoid arthritis, and systemic lupus erythematosus</p>	<p>Typical manifestations include contact dermatitis, tubercular lesions and graft rejection</p>

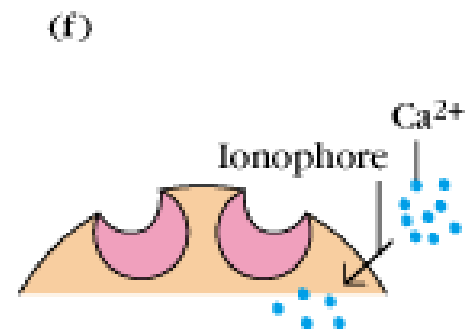
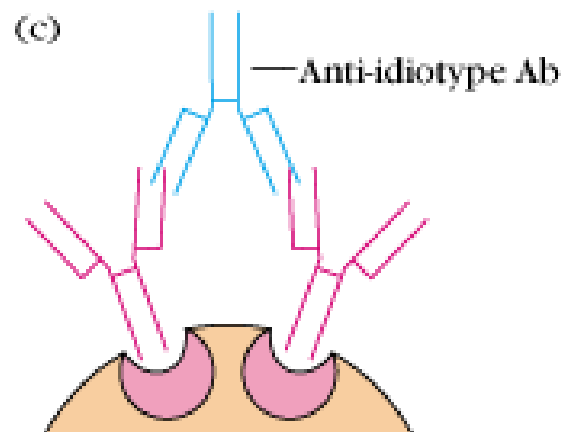
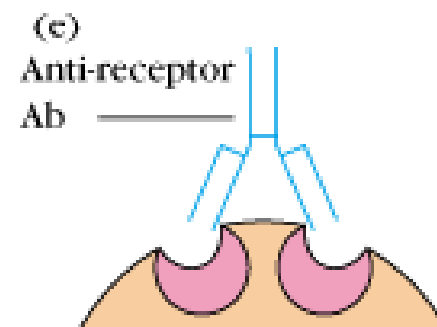
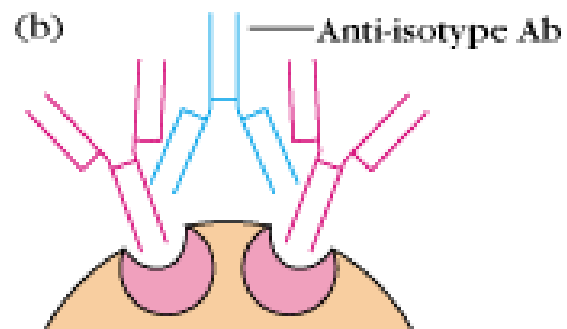
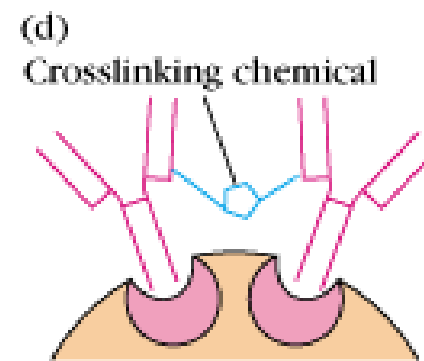
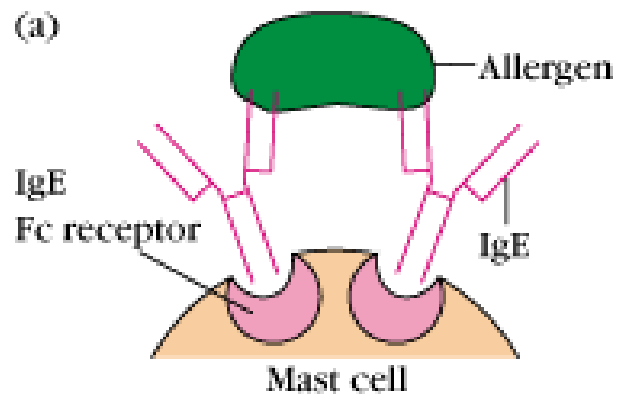


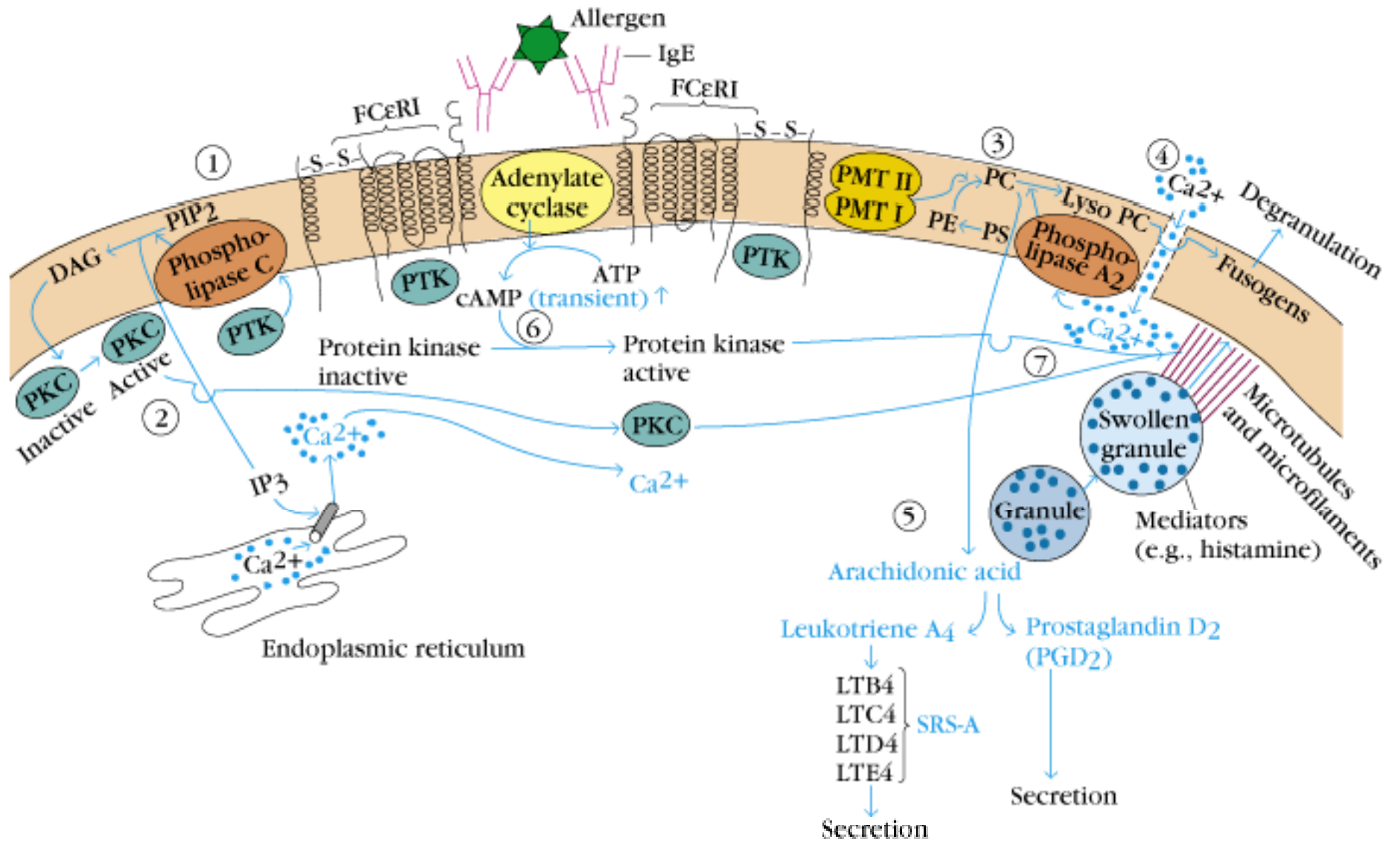
(a) FcεRI:  
High-affinity IgE receptor



(b) FcεRII (CD23):  
Low-affinity IgE receptor

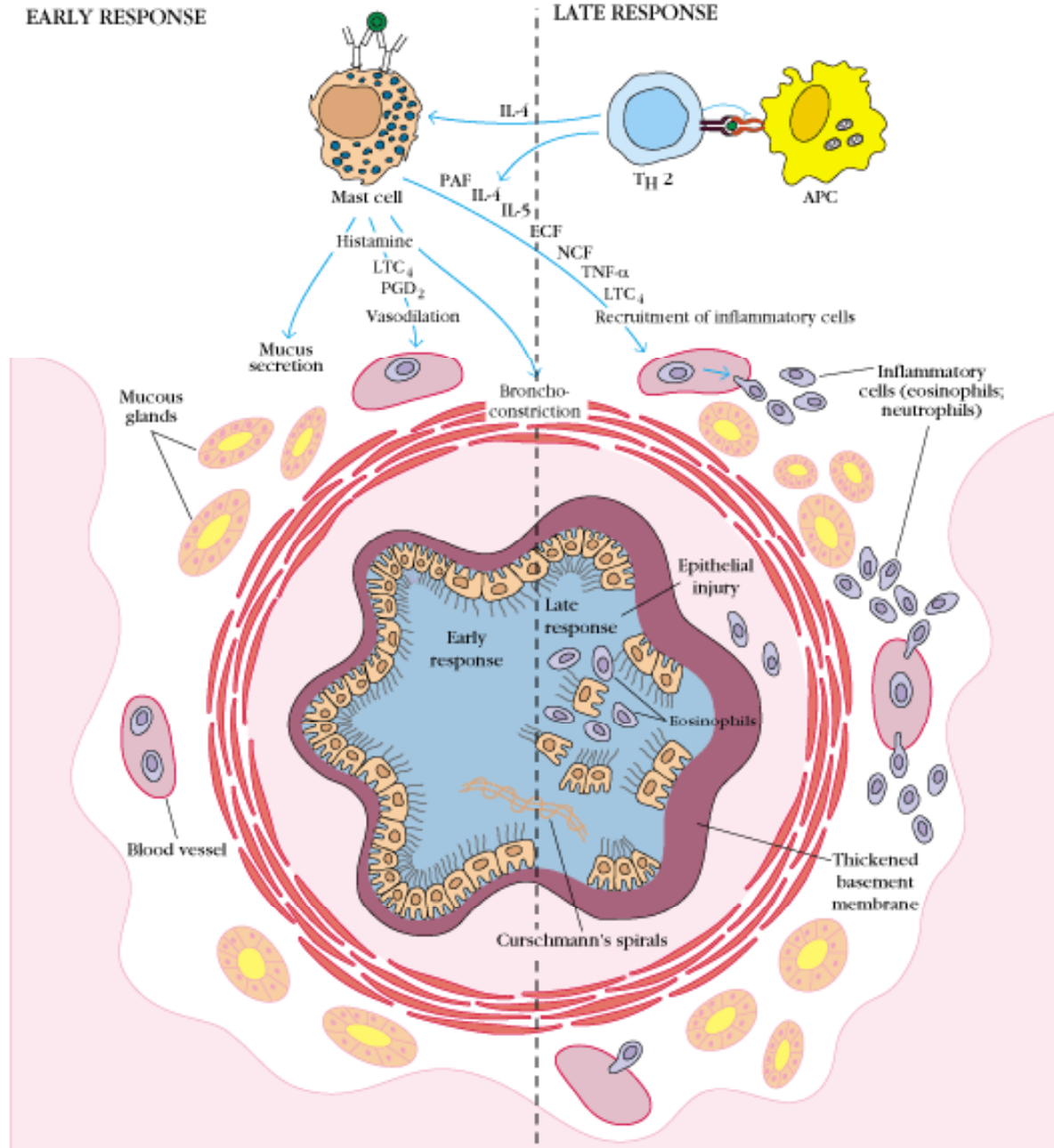






EARLY RESPONSE

LATE RESPONSE



EARLY RESPONSE (minutes)

LATE RESPONSE (hours)

Histamine  
PGD<sub>2</sub>  
LTC<sub>4</sub>

Vasodilation  
Bronchoconstriction  
Mucus secretion

IL-4, TNF-α, LTC<sub>4</sub>  
PAF, IL-5, ECF  
IL-4, IL-5

Increased endothelial cell adhesion  
Leukocyte migration  
Leukocyte activation

CONT. )

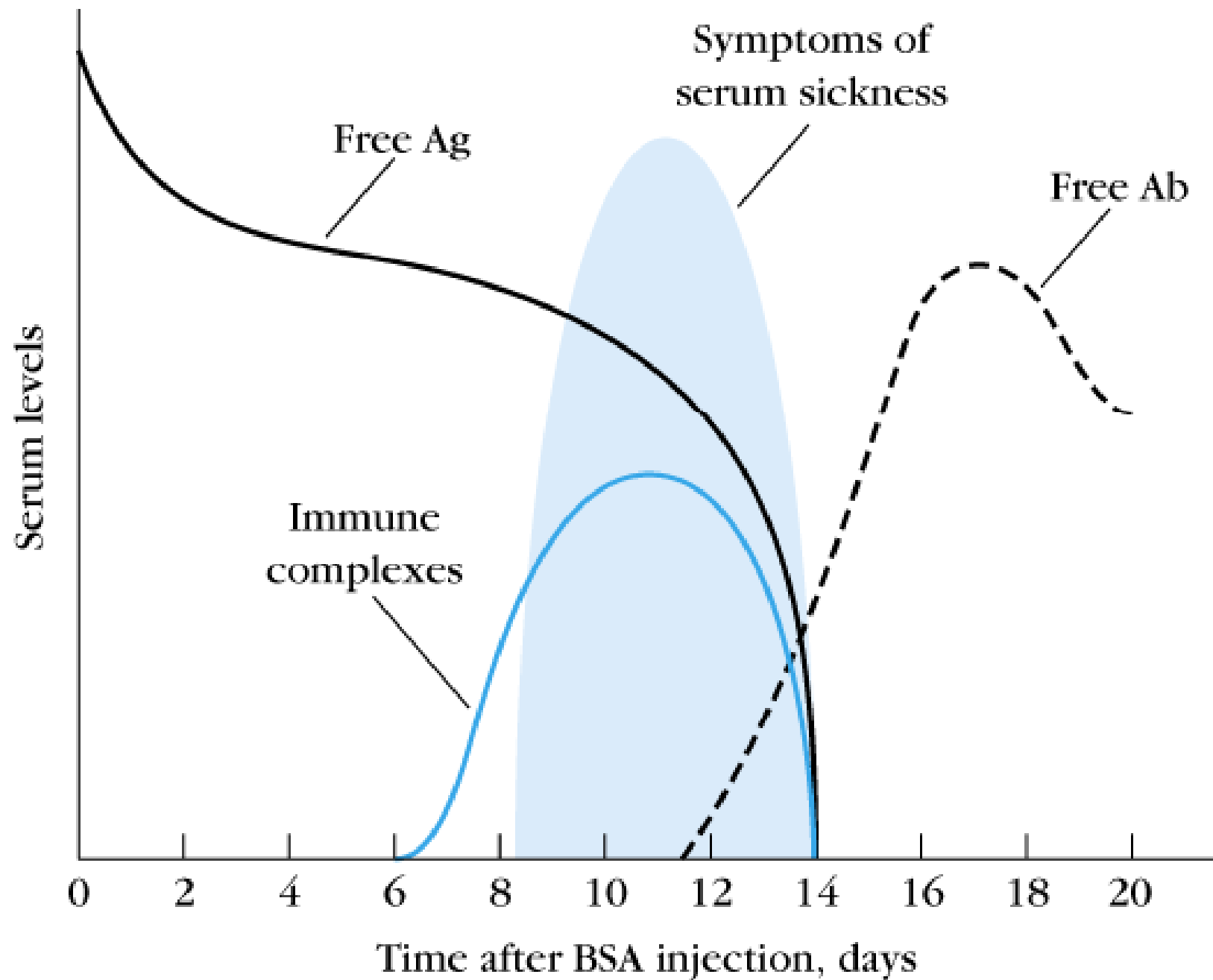
H. DUST )

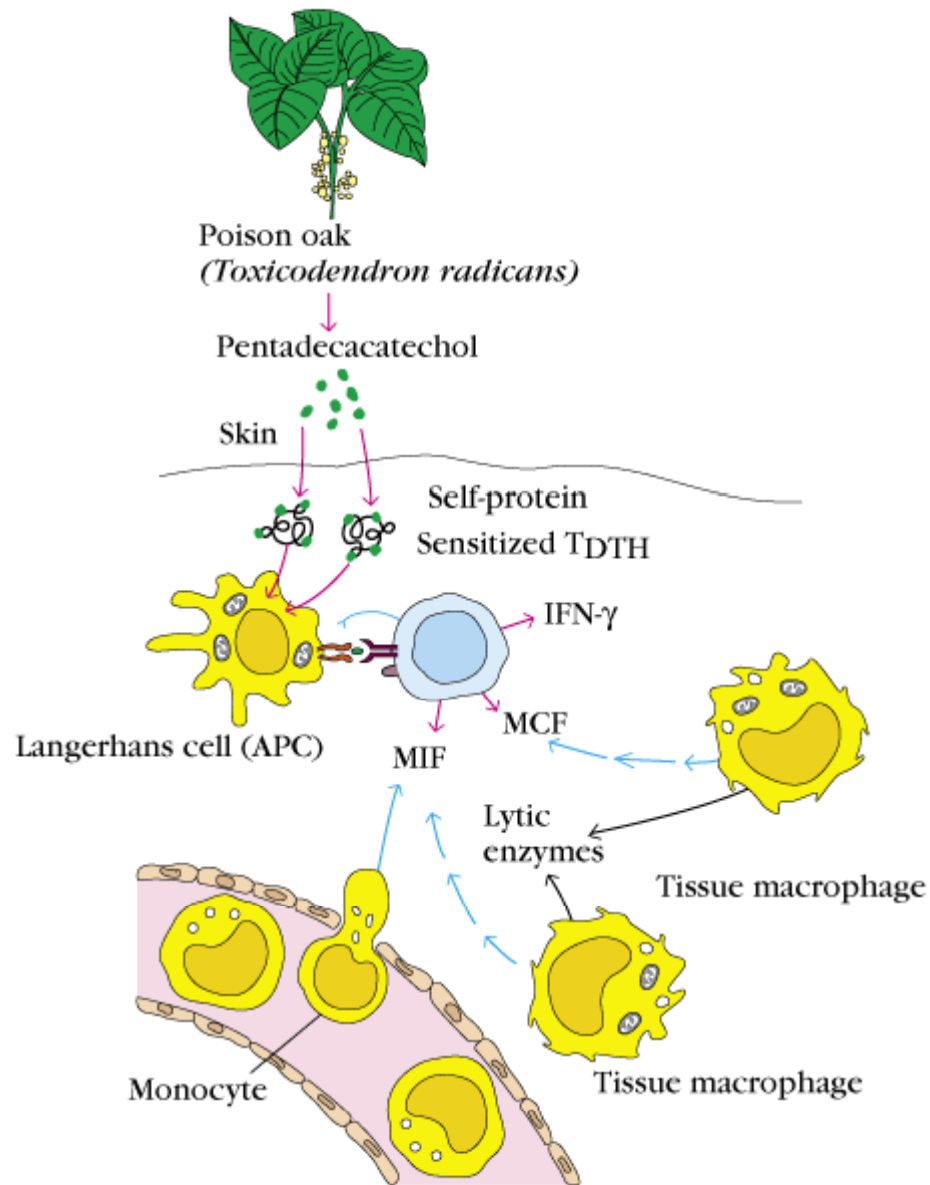
MITE )

GRASS )

SHRUB )

TREE )





## TABLE 16-1 COMMON ALLERGENS ASSOCIATED WITH TYPE I HYPERSENSITIVITY

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### *Proteins*

Foreign serum  
Vaccines

### *Plant pollens*

Rye grass  
Ragweed  
Timothy grass  
Birch trees

### *Drugs*

Penicillin  
Sulfonamides  
Local anesthetics  
Salicylates

### *Foods*

Nuts  
Seafood  
Eggs  
Peas, beans  
Milk

### *Insect products*

Bee venom  
Wasp venom  
Ant venom  
Cockroach calyx  
Dust mites

### *Mold spores*

### *Animal hair and dander*

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**TABLE 16-3 PRINCIPAL MEDIATORS INVOLVED IN TYPE I HYPERSENSITIVITY**

Mediator	Effects
<b>Primary</b>	
Histamine	Increased vascular permeability; smooth-muscle contraction
Serotonin	Increased vascular permeability; smooth-muscle contraction
Eosinophil chemotactic factor (ECF-A)	Eosinophil chemotaxis
Neutrophil chemotactic factor (NCF-A)	Neutrophil chemotaxis
Proteases	Bronchial mucus secretion; degradation of blood-vessel basement membrane; generation of complement split products
<b>Secondary</b>	
Platelet-activating factor	Platelet aggregation and degranulation; contraction of pulmonary smooth muscles
Leukotrienes (slow reactive substance of anaphylaxis, SRS-A)	Increased vascular permeability; contraction of pulmonary smooth muscles
Prostaglandins	Vasodilation; contraction of pulmonary smooth muscles; platelet aggregation
Bradykinin	Increased vascular permeability; smooth-muscle contraction
Cytokines	
IL-1 and TNF- $\alpha$	Systemic anaphylaxis; increased expression of CAMs on venular endothelial cells
IL-2, IL-3, IL-4, IL-5, IL-6, TGF- $\beta$ , and GM-CSF	Various effects (see Table 12-1)

