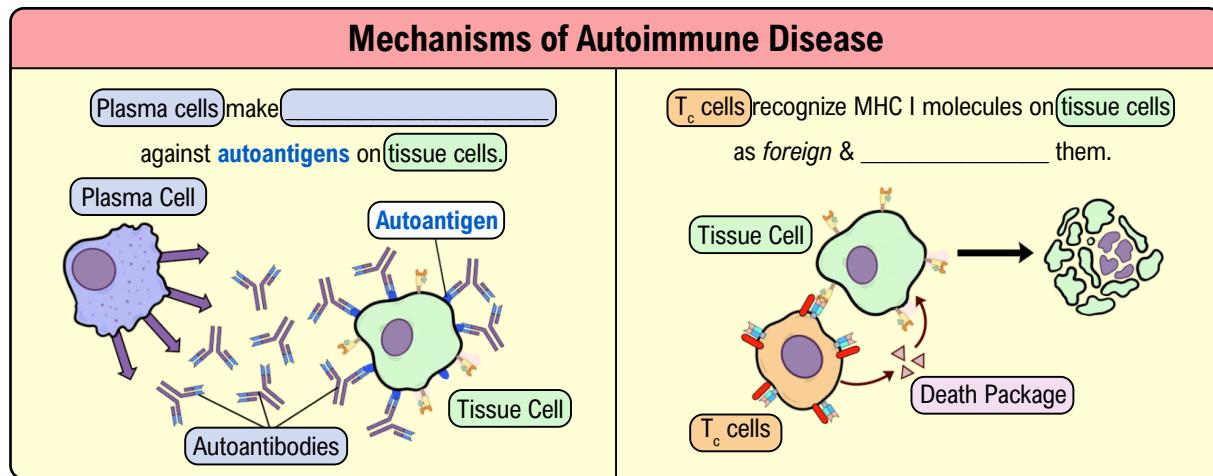


TOPIC: AUTOIMMUNE DISEASES

Autoimmune Diseases

◆ **Autoimmune Disease:** condition where the immune system *mistakenly* attacks _____ tissues (“auto” = self).

- Plasma cells may produce _____-**antibodies** (antibodies made against autoantigens (self-antigens)).
- Autoreactive _____-cells may recognize self-antigens presented on self-cells & kill them.



◆ Can be _____-specific or _____.

PRACTICE

Which of the following statements is true about autoantigens?

- Autoantigens are molecules on the surfaces of self-cells which trigger apoptosis.
- Autoantigens are molecules on the surfaces of self-cells which are attacked by the immune system.
- Autoantigens are molecules on the surfaces of foreign cells which are attacked by the immune system.
- When injected into a new host, autoantigens are integrated into the host's immune system.

PRACTICE

Which of the following statements about autoimmune diseases is false?

- Some autoimmune diseases are organ- or tissue-specific, and some are systemic (affect the entire body).
- Autoimmune diseases occur when the immune system attacks the body's own cells.
- Autoimmune diseases are triggered by plasma cells creating autoantibodies which bind to autoantigens.
- Autoimmune diseases occur when T cells recognize self-damaging immune cells & tag them for destruction.

TOPIC: AUTOIMMUNE DISEASES

Examples of Autoimmune Diseases

- ◆ Here are some examples of organ-specific & systemic autoimmune diseases:

Autoimmune Diseases	-Specific	Type II Hypersensitivity	Graves' Disease: autoantibodies bind hormone receptors on thyroid cells, overstimulating thyroid hormone production.
		Type IV Hypersensitivity	Myasthenia Gravis: autoantibodies bind & block receptors at neuromuscular junctions; prevents muscle contractions.
	Autoimmune Diseases	Type IV Hypersensitivity	Multiple Sclerosis: immune system (including T cells) attacks _____, compromising nerve impulse conduction.
		Type IV Hypersensitivity	Type 1 Diabetes Mellitus: T cell-mediated destruction of insulin-secreting cells in pancreas; reduces ability to regulate glucose.
Autoimmune Diseases	Type III Hypersensitivity	Systemic Lupus Erythematosus: autoantibodies bind autoantigens (e.g. DNA), forming immune complexes throughout body.	
		Rheumatoid Arthritis: immune complexes are deposited in joints, causing severe inflammation & pain.	

NOTE: There are no _____ for autoimmune diseases (only treatments/therapies).

EXAMPLE

Match the following autoimmune disease classifications with the correct description:

Rheumatoid Arthritis – Type III hypersensitivity & autoimmune disease	_____
Graves' Disease – Type II hypersensitivity & autoimmune disease	_____
Multiple Sclerosis – Type IV hypersensitivity & autoimmune disease	_____
Type 1 Diabetes Mellitus - Type IV hypersensitivity & autoimmune disease	_____

1	T cells mistakenly attack & destroy insulin-producing cells in the pancreas.
2	Immune system attacks antigen-antibody complexes deposited in joints.
3	Antibodies, T cells & macrophages mistakenly attack the myelin sheath of nerves.
4	Antibodies that mimic thyroid-stimulating hormone bind to thyroid cells & overstimulate them.

TOPIC: AUTOIMMUNE DISEASES

PRACTICE

_____ is an organ-specific autoimmune disease where the immune system damages the protective covering of the nerve cells (myelin sheath) in the body. This disease results in pain, fatigue, loss of coordination, and other adverse symptoms over a patient's lifetime.

a) Graves' Disease. b) Rheumatoid arthritis. c) Multiple sclerosis. d) Addison's disease.

PRACTICE

Which of the following statements about lupus erythematosus & multiple sclerosis is true?

a) Lupus is an organ-specific autoimmune disease, multiple sclerosis is systemic.

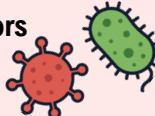
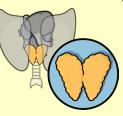
b) They're both autoimmune diseases, but lupus is a type III hypersensitivity while multiple sclerosis is a type IV hypersensitivity.

c) Lupus is caused by T cell-mediated immune responses, multiple sclerosis is due to immune complexes.

d) Lupus is a cell-specific autoimmune disease that only damages erythrocytes, multiple sclerosis only affects nerve cells.

Factors Contributing to Autoimmune Diseases

◆ It's NOT fully understood why/how autoimmune diseases develop, but these are _____ major contributing factors:

1. _____	2. Environmental Factors	3. Immune Regulation
		
Some show a family history, but the exact genes that cause them have not yet been determined.	Pathogens may _____ host factors – immunity is built against these antigens & the new antibodies also attack self-antigens.	Autoreactive T cells are <i>usually</i> destroyed in the _____, but if not, they may be released into the body.

PRACTICE

An individual can develop an autoimmune disease for a variety of reasons. Which of the following examples is NOT a way that someone could develop an autoimmune disease?

a) A person's exposure to environmental toxins can trigger the development of or exacerbate systemic lupus.

b) A son inherits genes from his mother which are strongly associated with developing Graves' disease.

c) Someone gets doses of too many different vaccines & their immune system begins attacking self-cells.

d) T cells that mistakenly attack self-antigens are not destroyed in the thymus.

e) All of the above are ways that someone could develop an autoimmune disorder.