AP BIO INSTA-REVIEW

TOPIC 4.1

Cell Communication

IST-3.A.1

Cells communicate with one another through direct contact with other cells or from a distance via chemical signaling–

a. Cells communicate by cell-to-cell contact.

IST-3.B.1

Cells communicate over short distances by using local regulators that target cells in the vicinity of the signal-emitting cell–

a. Signals released by one cell type can travel long distances to target cells of another cell

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TOPIC 4.1

What extracellular component aids in direct cell-cell communication?

A. Cell Wall

B. Cytoskeleton

C. Glycolipid

D. Secretory vesicle

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TOPIC 4.1

What extracellular component aids in direct cell-cell communication?

C. Glycolipid

Glycolipids are short carbohydrates attached to lipid molecules. These are used for cell to cell communication. The sugar component will bind to an active site on a receptor protein of another cell to communicate.

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TOPIC 4.1

Signaling where ligand binds to nearby cell...?

A. Autocrine

B. Hormonal

C. Paracrine

D. Synaptic

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TOPIC 4.1

Signaling where ligand binds to nearby cell...?

C. Paracrine

Paracrine signaling refers to a local signaling where the signaling molecule is released from a nearby cell then binds to a receptor on the target cell.

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TOPIC 4.1

Signal that binds to the secreting cell...?

A. Autocrine

B. Hormone

C. Paracrine

D. Synaptic

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TOPIC 4.1

Signal that binds to the secreting cell...?

A. Autocrine

The prefix "auto" means self, so autocrine will bind to the same cell. The secreting cell is also the target cell. The signaling molecule is released from the cell then binds to a receptor on that same cell.

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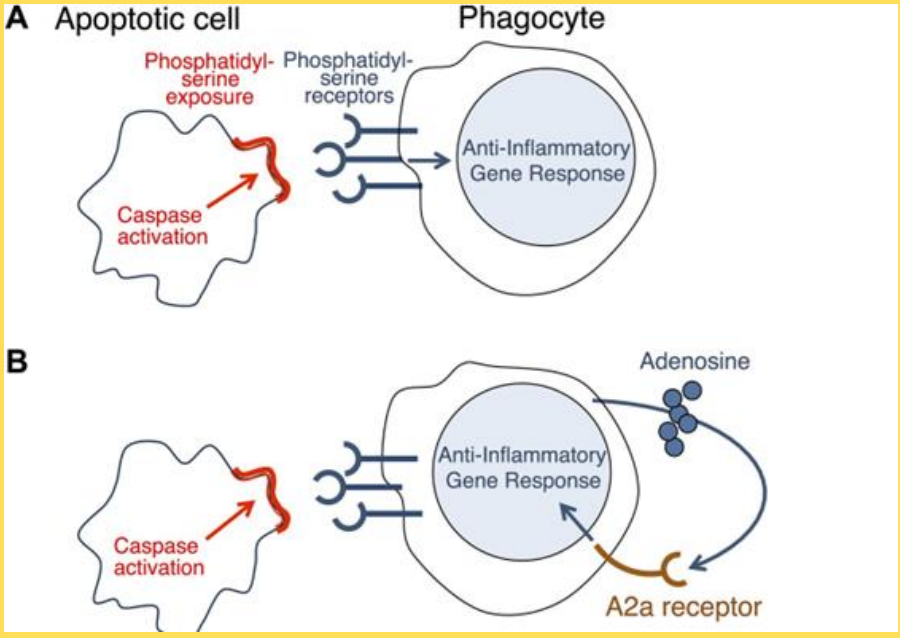
TOPIC 4.1



What type of signaling is shown?

A. Autocrine

B. Hormone

C. Paracrine

D. Synaptic

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TOPIC 4.1

What type of signaling is shown?

A. Autocrine

In autocrine signaling, the secreting cell is also the target cell. As you see in the image, the cell secretes the signaling molecule then it binds to a receptor on the membrane.

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TOPIC 4.1

Describe the pathway of signaling molecule released from the cell.

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TOPIC 4.1

Describe the pathway of signaling molecule released from the cell.

> Protein synthesized in Rough ER

> Protein modified in Golgi bodies

> Secretory vesicle fuses with plasma membrane

> Signaling molecule released by exocytosis

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TOPIC 4.1

Signaling by cell to cell contact like a Helper T cell binding to an antigen presenting cell. Which describes the type of signaling?

A. Direct signaling

B. Local signaling

C. Long Distance signaling

D. Synaptic signaling

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TOPIC 4.1

Signaling by cell to cell contact like a Helper T cell binding to an antigen presenting cell. Which describes the type of signaling?

A. Direct signaling

The antigen presenting cell has the antigen bound to a MHC on the membrane. The white blood cell receptor will bind to the antigen. This is a direct contact between the two cells hence "direct signaling".

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TOPIC 4.1

In autocrine signaling, which cell released the signal?

A. A nearby cell

B. An endocrine cell

C. The brain cell

D. The same cell

AP BIO INSTA-REVIEW

TOPIC 4.1

In autocrine signaling, which cell released the signal?

D. The same cell

In autocrine signaling, the secreting cell is also the target cell. The prefix "auto" means self so the signaling molecule will be released then bound to the same cell.

AP BIO INSTA-REVIEW

TOPIC 4.1

In endocrine signaling, what cell released the signal?

A. A nearby cell

B. An endocrine cell

C. The brain cell

D. The same cell

AP BIO INSTA-REVIEW

TOPIC 4.1

In endocrine signaling, what cell released the signal?

B. An endocrine cell

Endocrine signaling is a long distance signaling. An endocrine cell will release the signaling molecule into the blood stream which will carry the signaling molecule to the target cell.

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TOPIC 4.1

In paracrine signaling, which cell released the signal?

A. A nearby cell

B. An endocrine cell

C. The brain cell

D. The same cell

AP BIO INSTA-REVIEW

TOPIC 4.1

In paracrine signaling, which cell released the signal?

A. A nearby cell

Paracrine signaling refers to a local signaling where the signaling molecule is released from a nearby cell then binds to a receptor on the target cell.

AP BIO INSTA-REVIEW

TOPIC 4.1

Where is the receptor for a steroid hormone?

A. Intracellular

B. Membrane Bound

AP BIO INSTA-REVIEW

TOPIC 4.1

Where is the receptor for a steroid hormone?

A. Intracellular

Steroids are nonpolar due to their carbon ring structures. The plasma membrane is also nonpolar. The steroid is able to pass directly through the membrane so the receptor needs to be on the inside of the cell (intracellular)

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TOPIC 4.1

Where is the receptor for a protein hormone?

A. Intracellular

B. Membrane Bound

AP BIO INSTA-REVIEW

TOPIC 4.1

Where is the receptor for a protein hormone?

B. Membrane Bound

Proteins are polar due to their polar R groups (and the folding of nonpolar R groups to the interior). The plasma membrane is nonpolar. The protein is unable to pass through the membrane so the receptor must be on the membrane (membrane bound).

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TOPIC 4.1

Why do we see a difference in the location between the two receptors?

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TOPIC 4.1

Why do we see a difference in the location between the two receptors?

Steroids are nonpolar, which allows them to pass through the membrane. Since the ligand is able to cross the membrane, the receptor needs to be intracellular.

Proteins are polar, which inhibits their passage across the membrane without assistance. This means the receptor would sit on the membrane.

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TOPIC 4.1

Ligands are specific to type of cell they bind to.

A. True

B. False

AP BIO INSTA-REVIEW

TOPIC 4.1

Ligands are specific to type of cell they bind to.

A. True

Ligands are signaling molecules. The active site on the receptor will bind to the ligand. Only the target cell(s) has the receptor that binds to the ligand.

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TOPIC 4.1

What must a cell have in order for correct ligand to bind?

AP BIO INSTA-REVIEW

TOPIC 4.1

What must a cell have in order for correct ligand to bind?

Receptor that binds to the ligand.

Each cell has different receptors. If the receptor binds to the ligand, then it will cause a response in the cell.

AP BIO INSTA-REVIEW

TOPIC 4.1

Which organelle responsible for the endocrine signal?

A. Golgi Bodies

B. Lysosome

C. Rough ER

D. Smooth ER

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TOPIC 4.1

Which organelle responsible for the endocrine signal?

C. Rough ER

Rough ER has ribosomes on its membrane. These ribosomes are responsible for protein synthesis, so the rough ER is responsible for secreted proteins.