

Inflammation Worksheet Answer Key

What is inflammation?

an immunologic defense against tissue injury, infection, or an allergy. It is a process involving white blood cells and a number of different chemicals that serve to protect the body against invading pathogens or cellular/tissue trauma. The inflammatory response helps to control damage and, eventually, promote healing. Cellular damage caused by trauma, microbes, or specific chemical agents results in the development of inflammation.

How can inflammation be helpful or beneficial?

The inflammatory response plays a protective and defensive role by ridding the site of injury from microbes, toxins, or foreign material, preventing their transmission to other organs, and promoting tissue repair at the site. It is an attempt to restore tissue homeostasis.

Typical signs of inflammation result from a series of events below. Fill in the blank with the appropriate terms from the word bank:

Word Bank:

Neutrophils

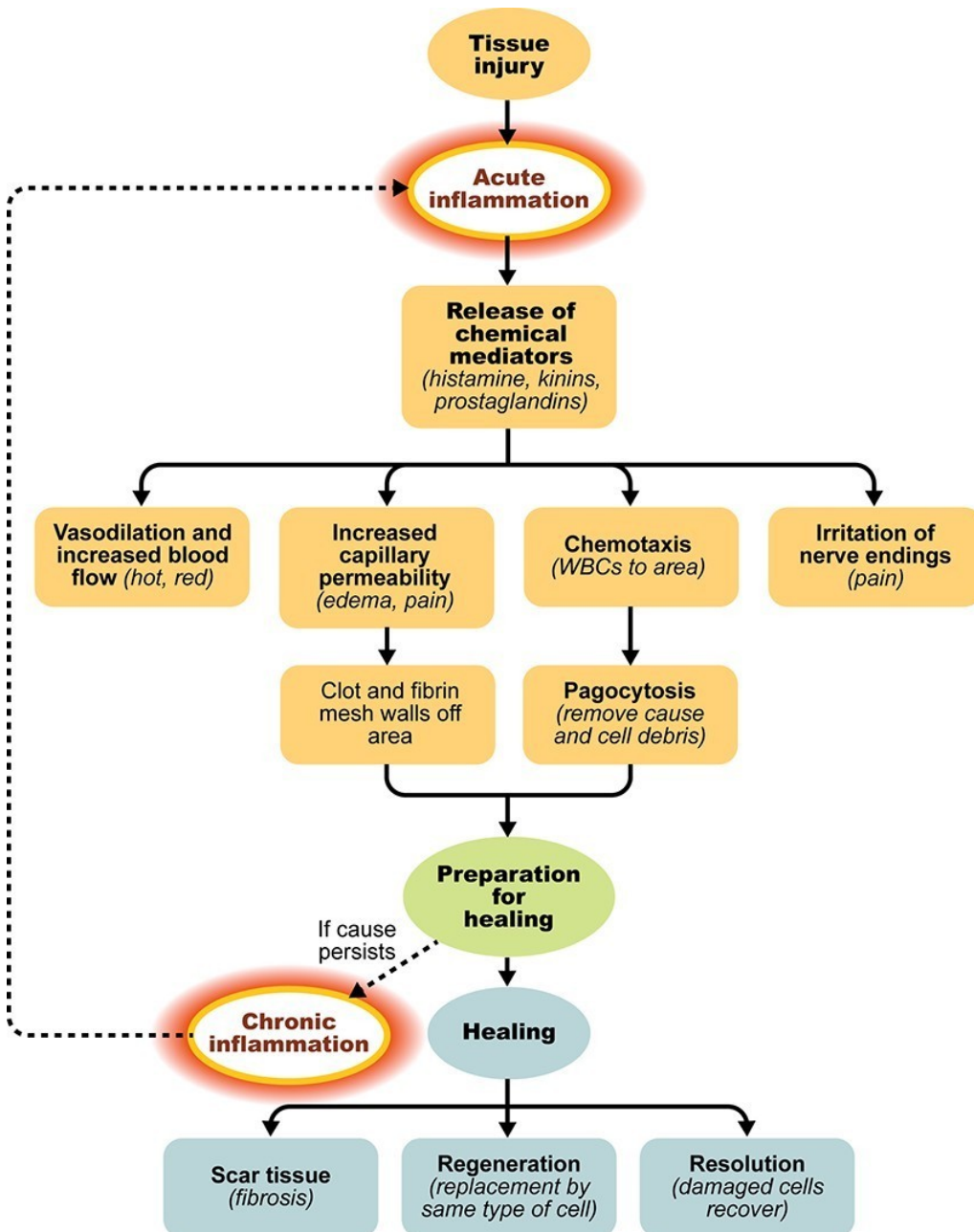
Macrophages

Bradykinin

Histamine

Pain

1. **Bradykinin** is released from the injured cells and activates pain receptors.
2. **Pain** causes mast cells and basophils to release histamine.
3. Both bradykinin and **histamine** cause the capillaries to dilate, increasing blood flow to, and capillary permeability in, the injured area.
4. A break in the skin or mucous membranes allows bacteria to enter the tissue.
5. First, neutrophils are activated, and later, monocytes.
6. **Neutrophils**, a type of white blood cell, phagocytize (surround and kill) bacteria.
7. **Macrophages** enter the interstitial space to phagocytose (kill) pathogens and other debris.



What are the 4 classic signs of inflammation?

1. **Pain**
2. **Swelling**
3. **Redness**
4. **Warmth**

When tissue injury occurs, the pathophysiology behind the classic signs of inflammation occur below. *Fill in the blank with the correct terms below:*

Word Bank:

Swelling Redness Warmth Loss of function Proinflammatory hormones Pain

1. **Proinflammatory hormones** (e.g., prostaglandins, cytokines, histamines) increase blood flow to the injured area.
2. Increased blood flow results in both **redness** and **warmth**.
3. **Swelling** is the result of a combination of increased blood flow and extravasation of white blood cells (WBCs), fluids, and other substances out of the vascular system into the injured area.
4. **Pain** results from the pressure of swollen tissues that stimulate pain receptors.
5. Loss of function occurs as a result of swelling. For example, swelling can impede muscle and joint movement. Pain can also cause guarding and avoidance of painful voluntary movement, which also contributes to **loss of function**.

