

Immunity

Immune system: recognizes, attacks, destroys + remembers pathogen

① Nonspecific defence

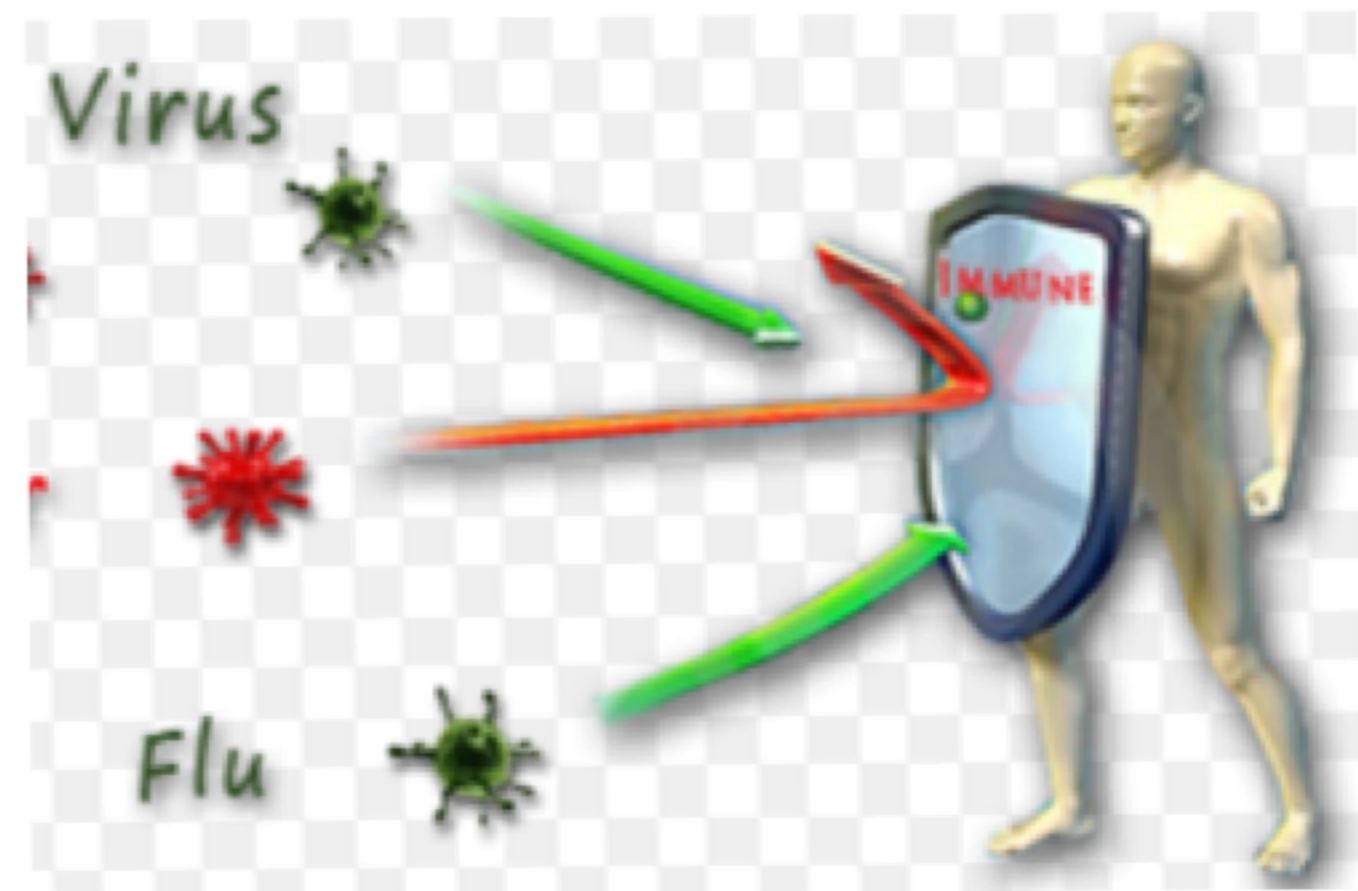
② Specific
- army



Non-specific Immunity

- use physical barriers & chemical barriers to defend.

* 2 lines of defense.



1st Line of Defense

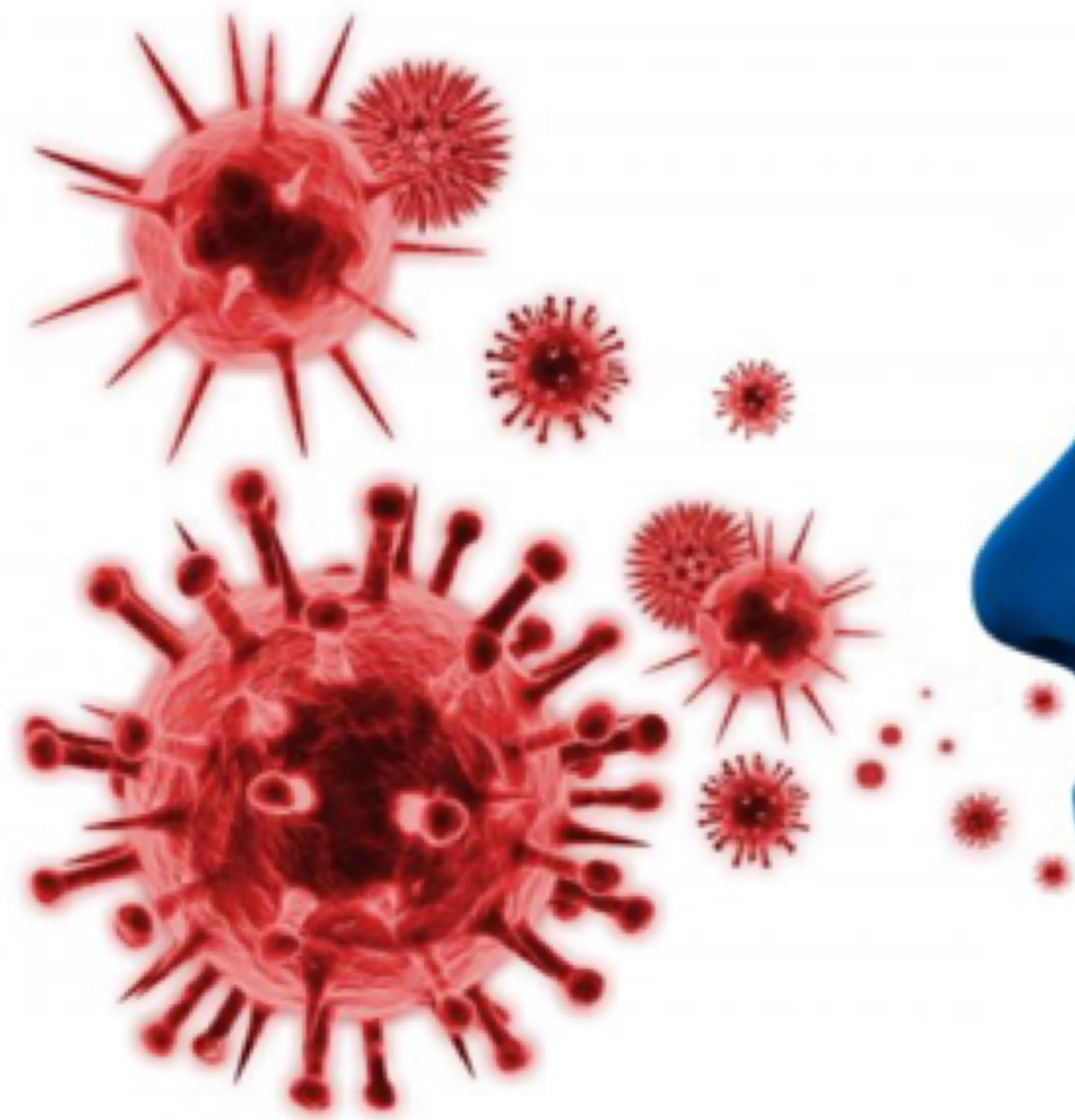
Keeps things (pathogens)
out of your body.

Skin, sweat (oils, acids,
enzymes)

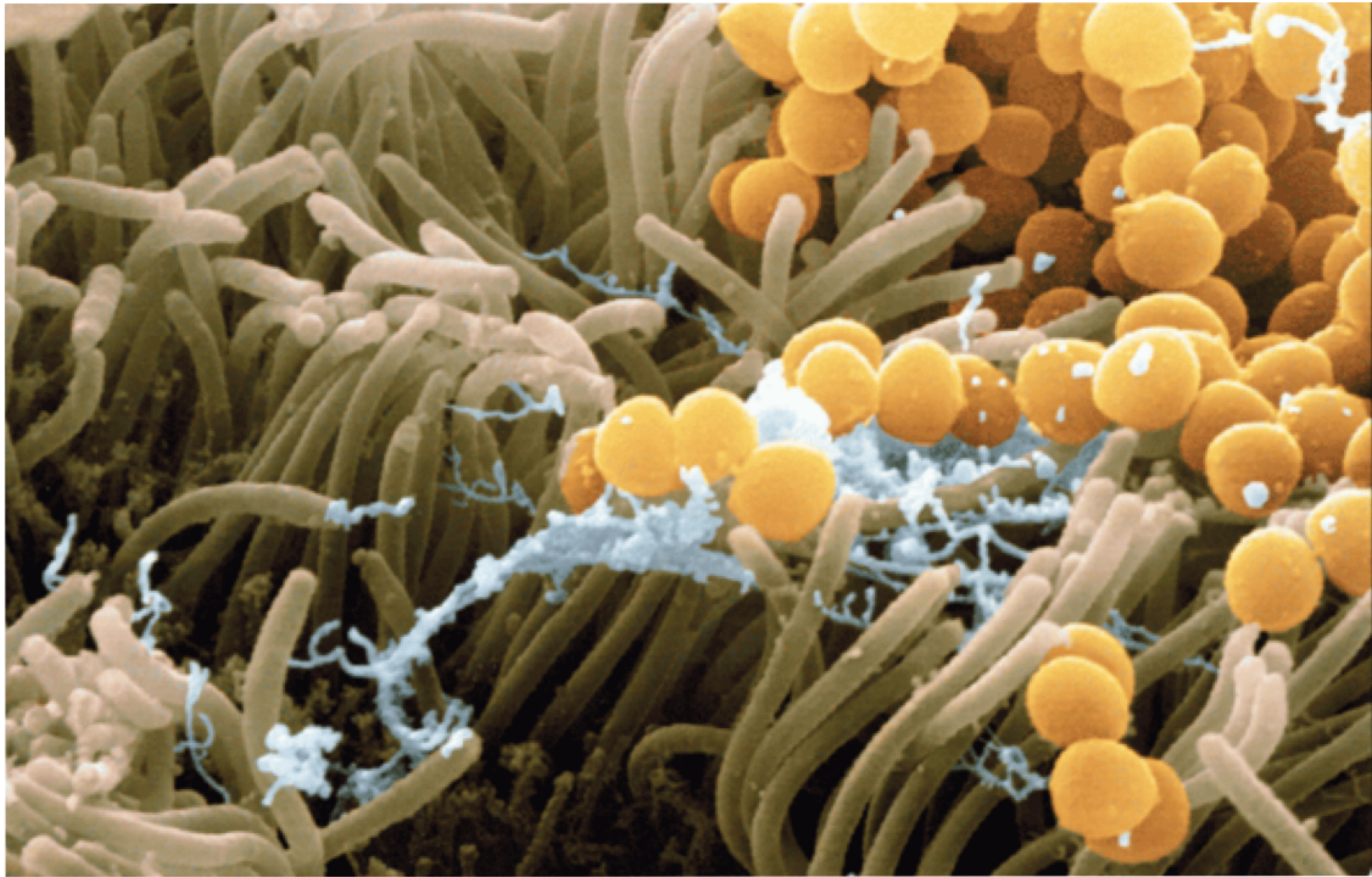
- mucus, cilia (hairs)

- Traps pathogens
the cilia put out
- HCL





wiseGEEK



2nd Line of Defense

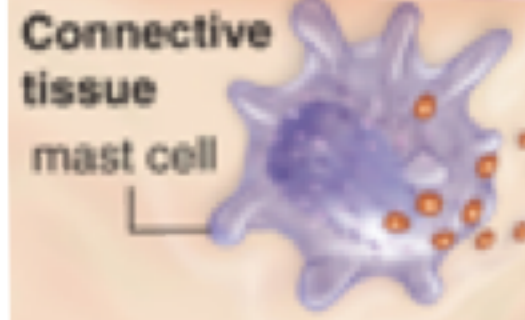
- inflammatory

Ex) splinter



1. Injured tissue cells and mast cells release histamine and other inflammatory chemicals which cause capillaries to dilate. Increased blood flow to the area results in redness and heat.

5. Monocytes become aggressive macrophages, which quickly phagocytize pathogens and stimulate the immune response.



histamine

Connective tissue mast cell

injured tissue

pathogen

macrophage

neutrophil

monocyte

colony stimulating factors

4. Neutrophils and monocytes squeeze through the capillary wall and phagocytize pathogens.

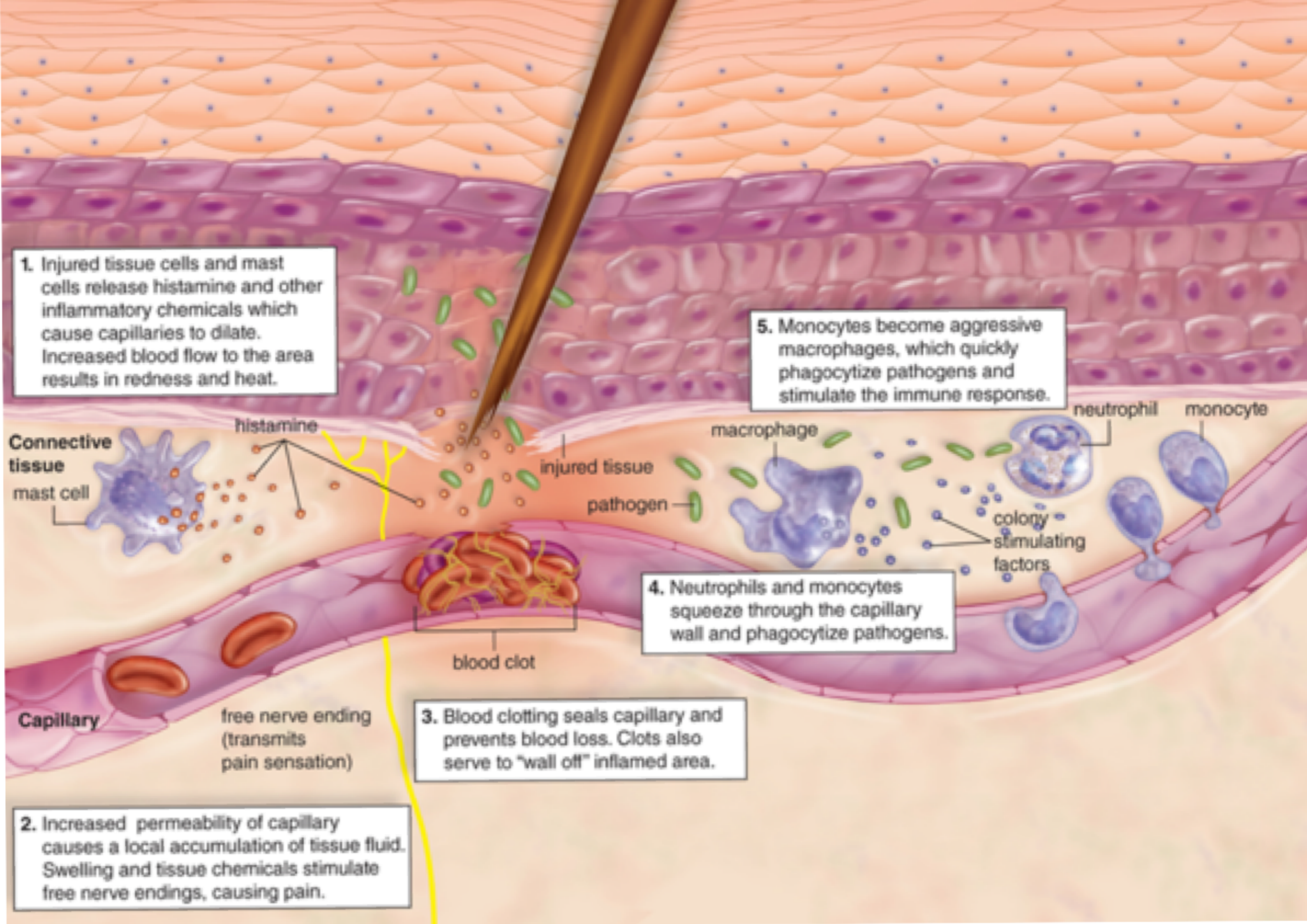
3. Blood clotting seals capillary and prevents blood loss. Clots also serve to "wall off" inflamed area.

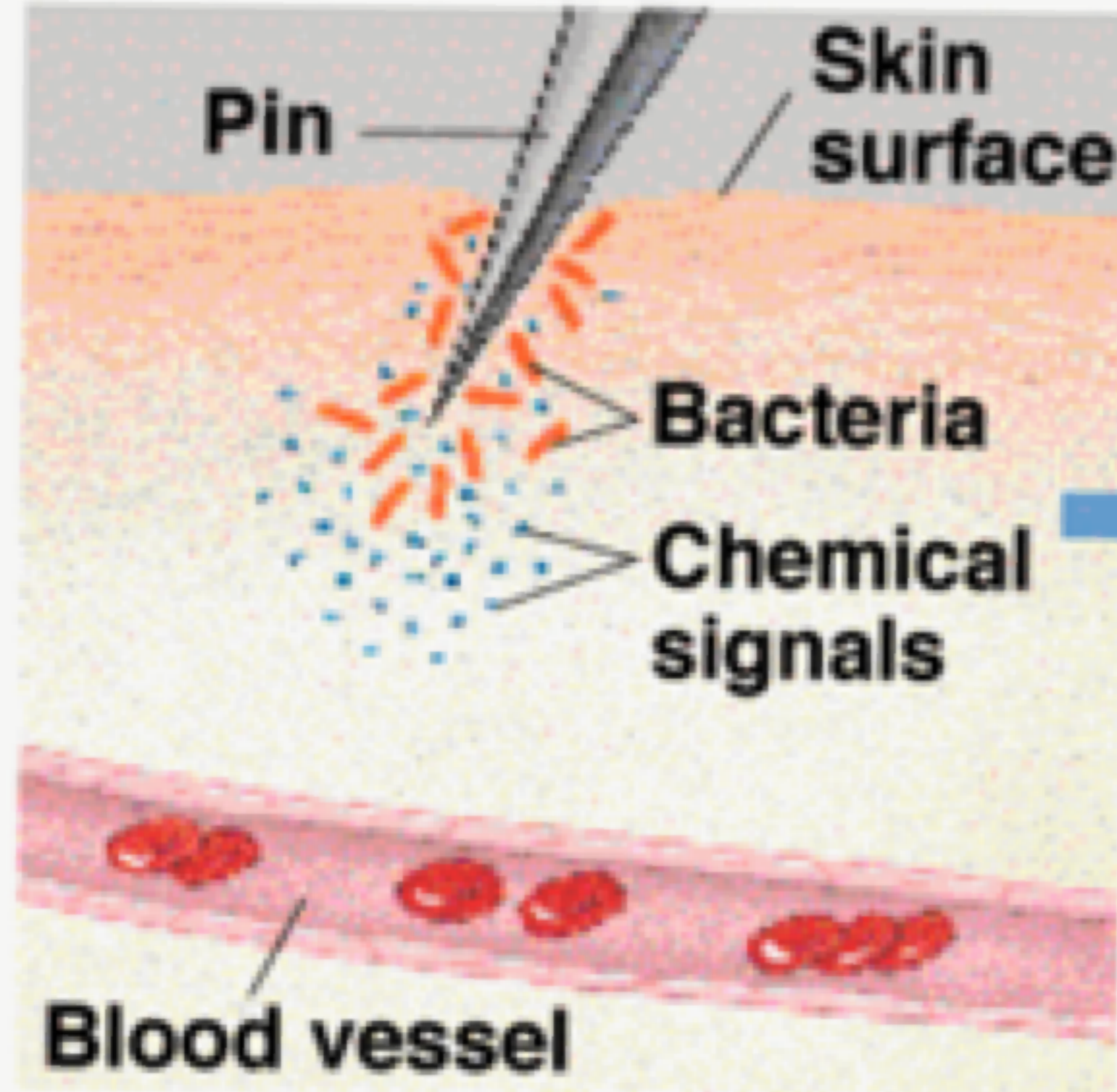
blood clot

free nerve ending (transmits pain sensation)

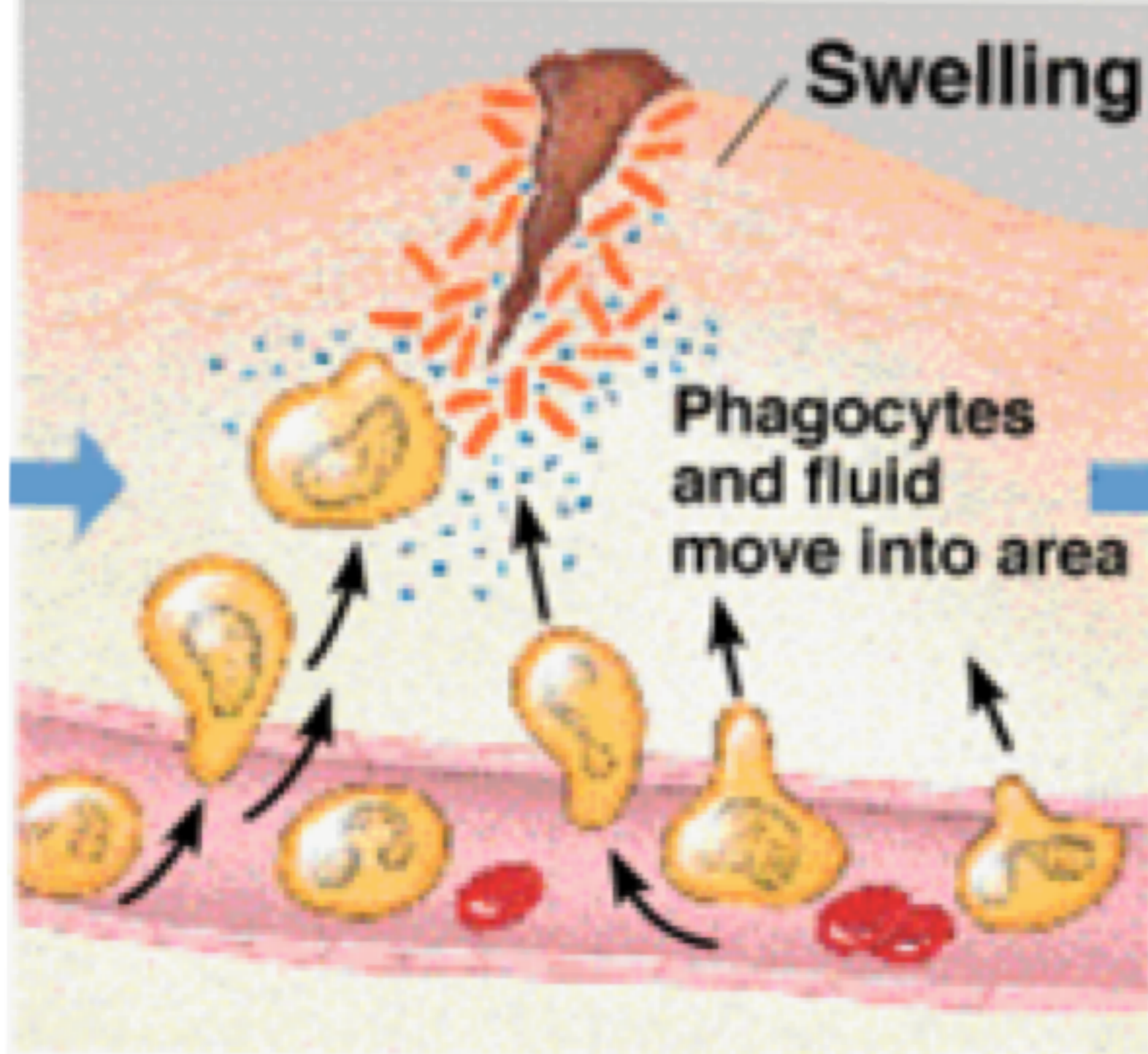
Capillary

2. Increased permeability of capillary causes a local accumulation of tissue fluid. Swelling and tissue chemicals stimulate free nerve endings, causing pain.

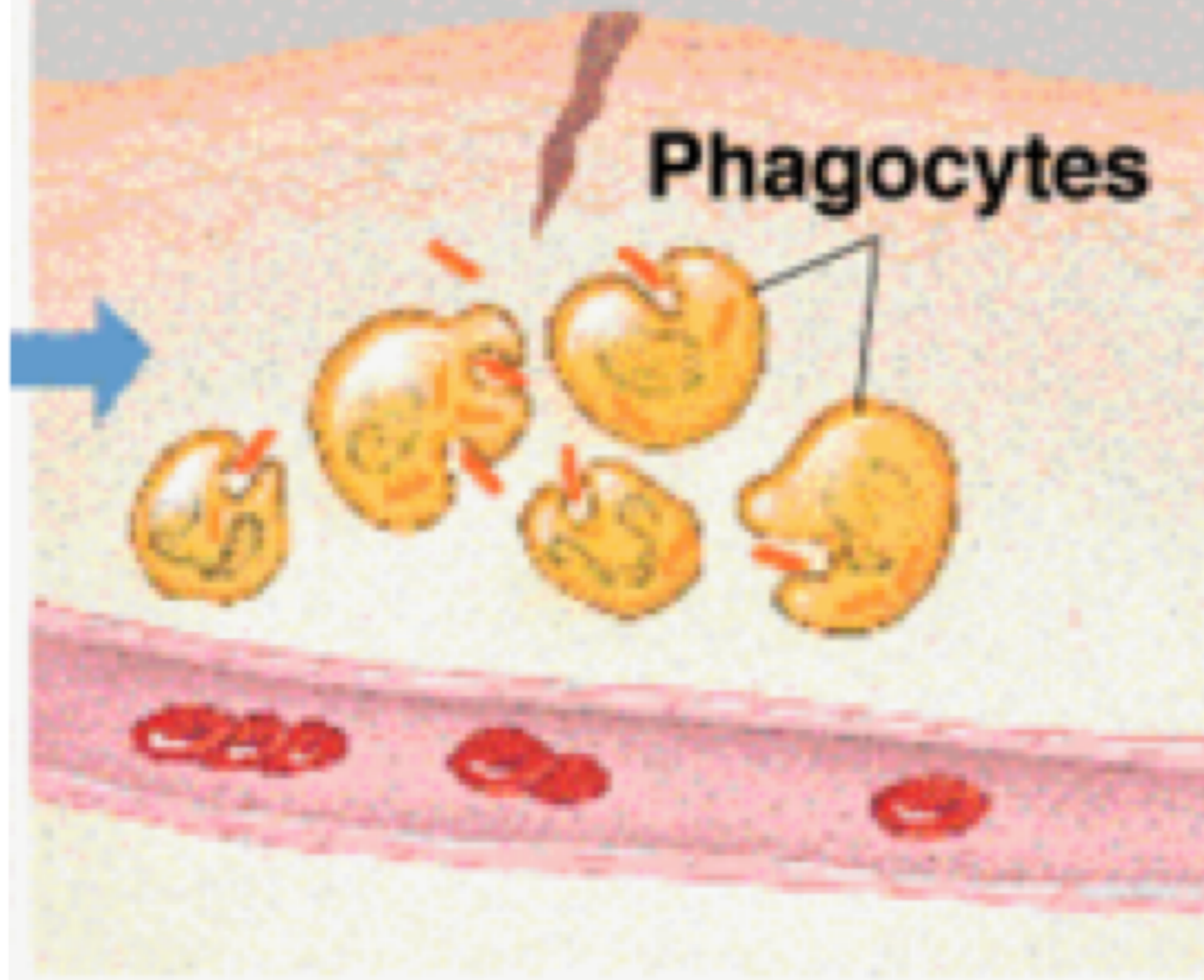




- 1** Tissue injury; release of chemical signals such as histamine



- 2** Dilation and increased leakiness of local blood vessels; migration of phagocytes to the area



if virus →
release
interferon
tells cells
to protect
themselves

- 3** Phagocytes (macrophages and neutrophils) consume bacteria and cell debris; tissue heals