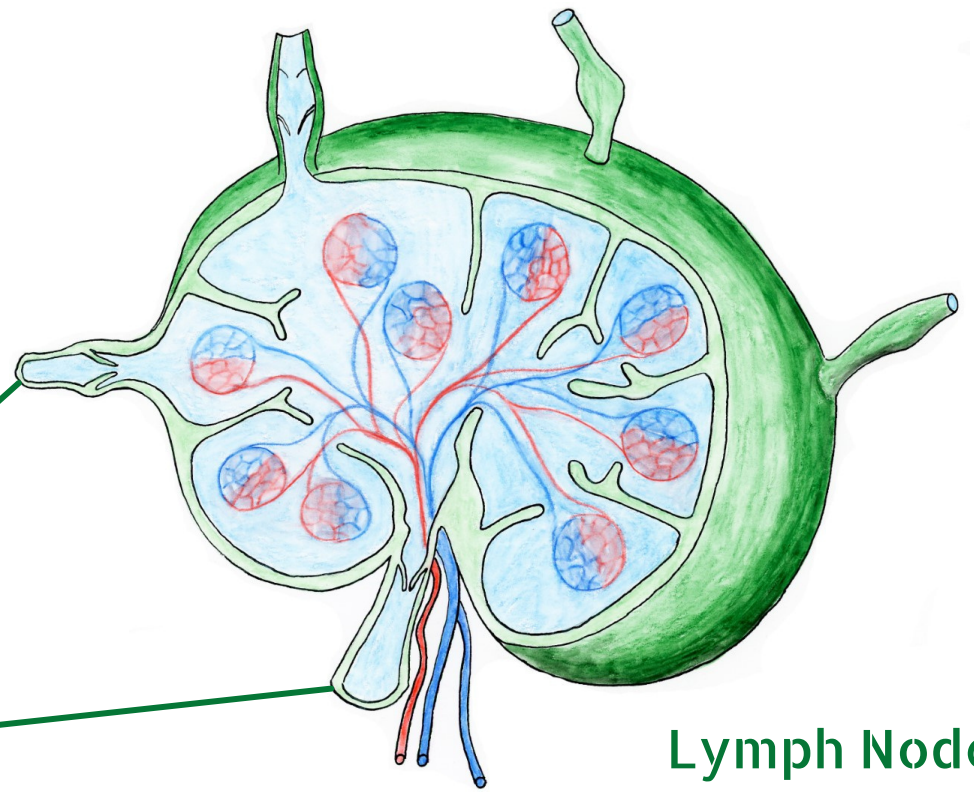
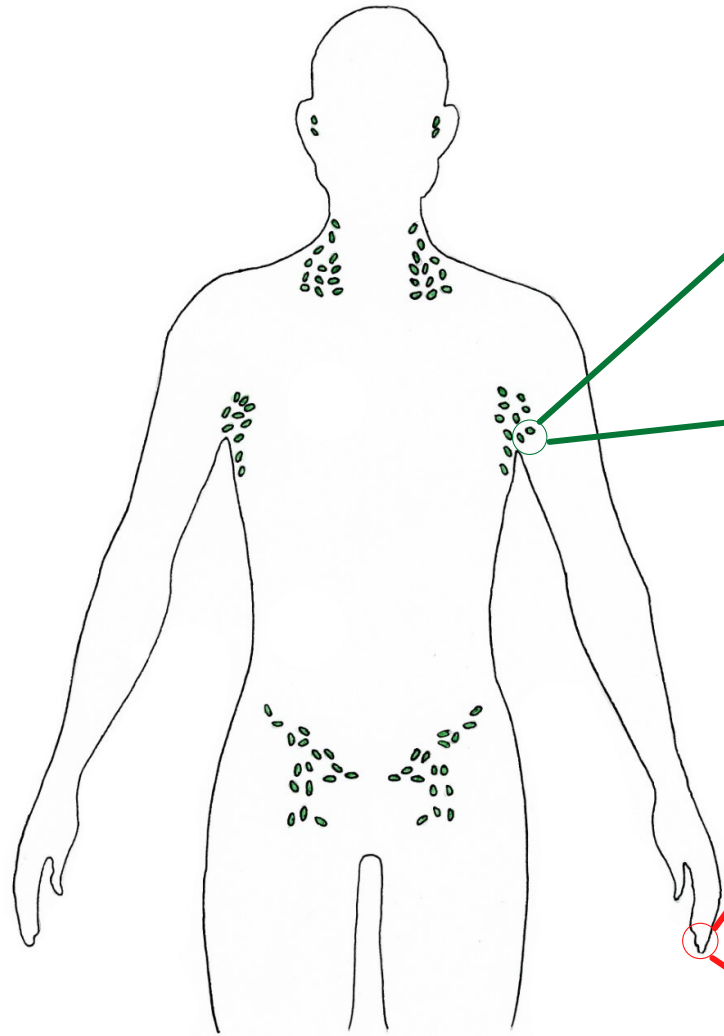
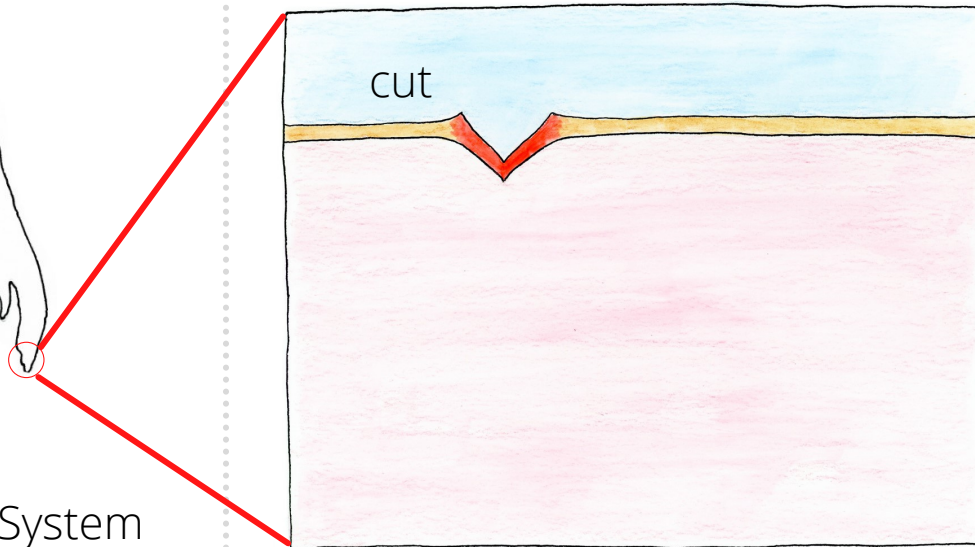


Immune Response Simulation Board



Lymph Node



skin

body

Cut Site

Human body showing the Lymphatic System

Card A

First Responders

Imagine you get a cut on your finger. The cut in your skin provides a pathway for **pathogens** to enter your body.

1. Slide the pathogens  through the cut.

Now that the pathogens are in your body it triggers an **immune response**. A **dendritic cell** finds the pathogen and engulfs or eats it, which activates other immune cells.

2. Move the dendritic cell  towards a pathogen 
Place the pathogen into the dendritic cell.

Proceed to Card B

Card C

Building an Army

Once the T cell has recognized the pathogen it will build an army of **killer cells** and a group of **memory cells**.

1. Place the killer cell  and memory cell  in the lymph node.

Memory cells remain in the lymph node after being formed, while killer cells go to the site of the infection to attack the pathogens.

Proceed to Card D


Card B

Alerting More Immune Cells

Once the dendritic cell has engulfed the pathogen it travels to the nearest **lymph node** (headquarters for our immune response).

1. Place the dendritic cell  with its pathogen into the lymph node. Leave the other pathogen  at the cut site.

Dendritic cells activate T cells. **T cells** build an army that attacks the pathogen. This takes time (up to 6 days).

2. Place all the T cells  into the lymph node.

T cells can only recognize one pathogen.

3. Find the T cell that can connect to and recognize the pathogen. Keep this T cell and the dendritic cell in the lymph node.



Proceed to Card C

Card D

Killer Cells

1. Place the killer cell  at the infection (cut site) on top of the pathogen .

Killer cells engulf the pathogen and break it into tiny pieces. They have a short life span and die soon after fighting the infection.

2. Remove the killer cell  and pathogen  from the cut site.

The immune response is complete, the infection is gone!



Leave the memory cell in the lymph node, remove the other pieces, and proceed to Card E

Card E

A Repeat Infection

The T cell makes memory cells that remember how to identify a specific pathogen if it enters the body in the future.

A few weeks later you cut another finger and the same type of pathogen enters your body. This time the memory cells are waiting to attack the pathogen!



1. Use the game pieces to show how the dendritic cell  engulfs a pathogen  at the cut site and then moves to the lymph node.

Proceed to Card F



Card F

Memory Cells

This time the Dendritic cell activates memory cells in the lymph node.

1. Connect the pathogen  to the memory cell .

Memory cells create an army of killer cells more quickly getting rid of the infection faster.

2. Move the killer cell  to the site of infection and place it on a pathogen .

Each time you are exposed to the same pathogen your memory cells will be stronger and more effective!

Return the game pieces to the kit and proceed to the next activity in the booklet.