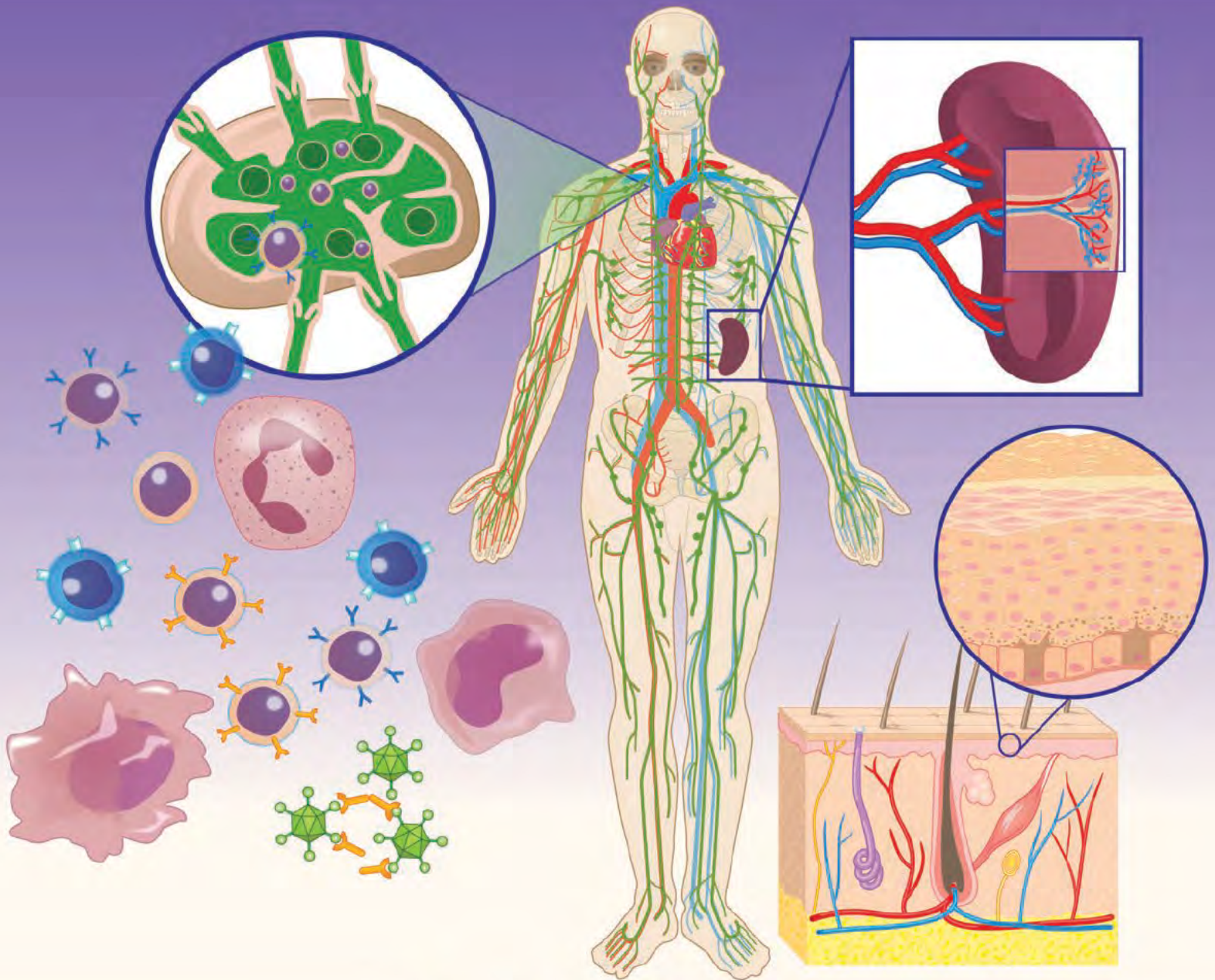


HUMAN BODY III: Maintaining Life

Learning Guide



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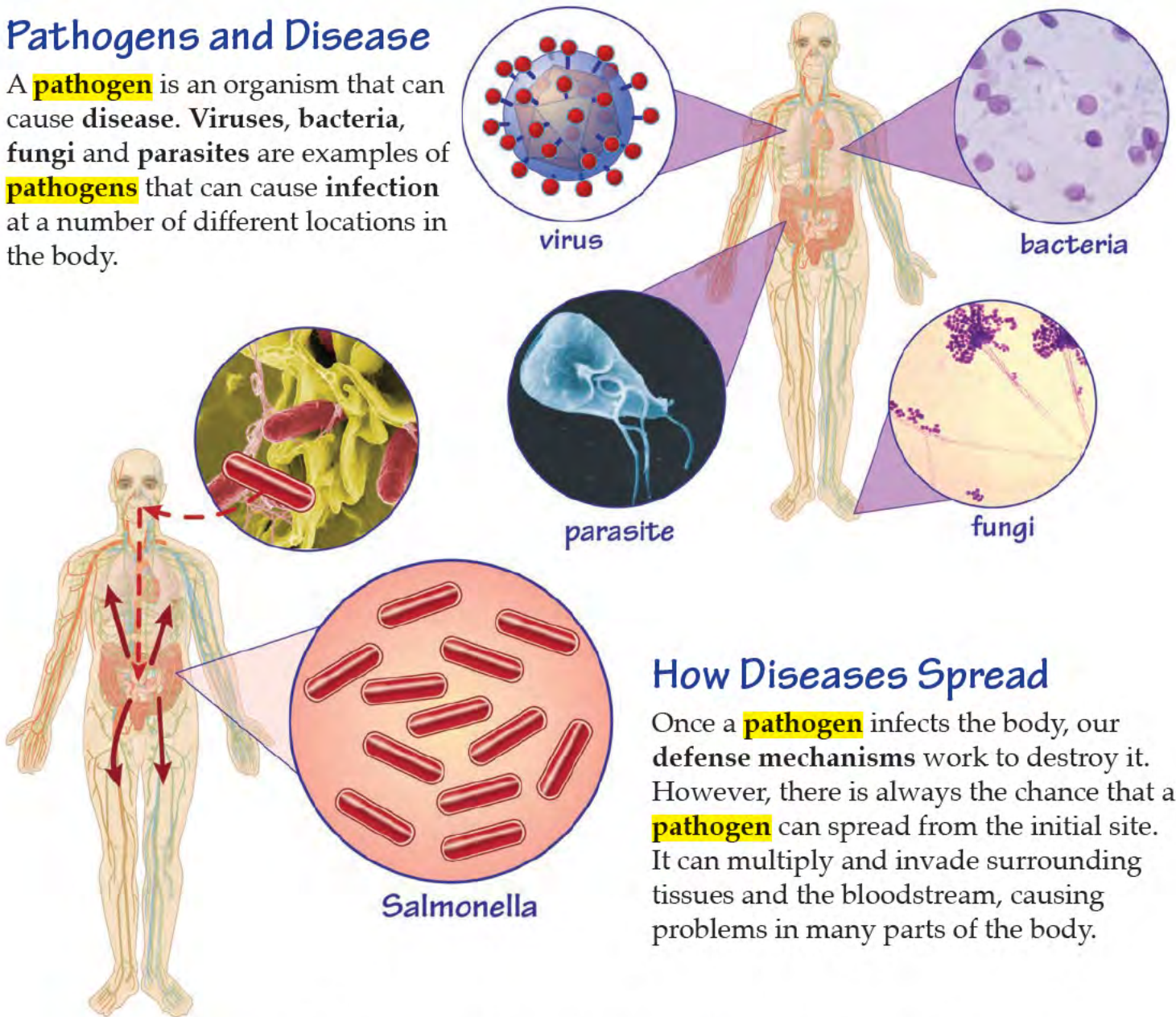
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DISEASE AND THE BODY'S DEFENSE

Pathogens and Disease

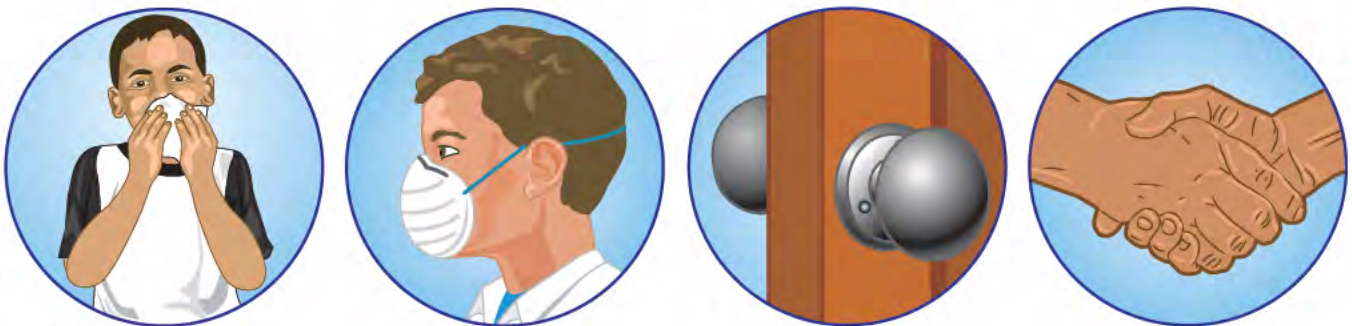
A **pathogen** is an organism that can cause **disease**. **Viruses**, **bacteria**, **fungi** and **parasites** are examples of **pathogens** that can cause **infection** at a number of different locations in the body.



How Diseases Spread

Once a **pathogen** infects the body, our **defense mechanisms** work to destroy it. However, there is always the chance that a **pathogen** can spread from the initial site. It can multiply and invade surrounding tissues and the bloodstream, causing problems in many parts of the body.

Pathogens can also be **transmitted** from one human to another through the air, via skin-to-skin contact, or on surfaces such as door handles.

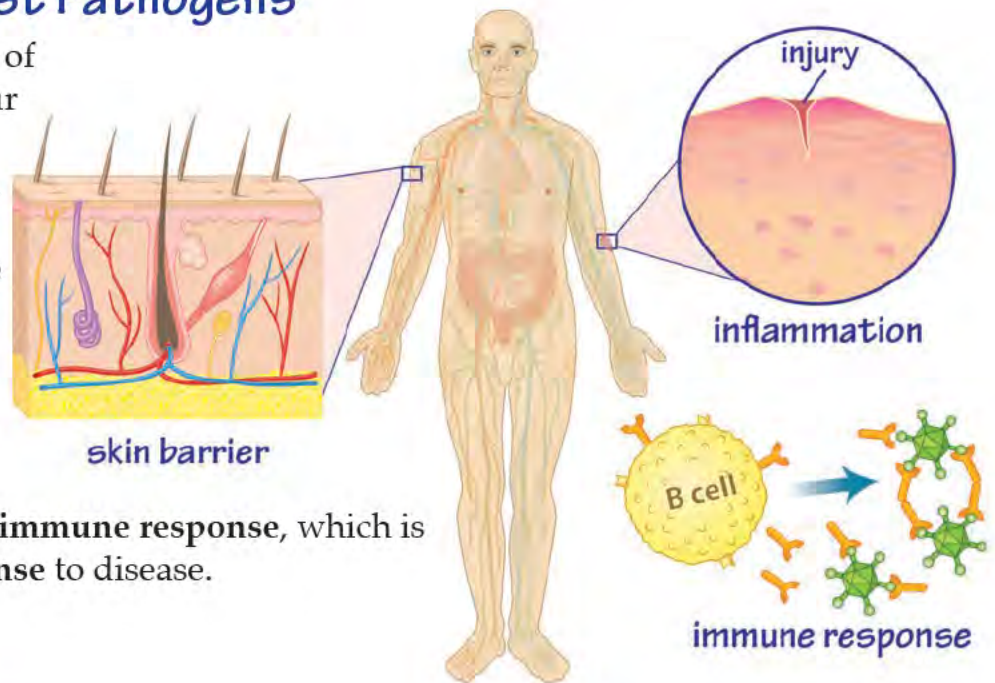


Body Defense against Pathogens

You encounter a wide variety of **pathogens** every day, but your body is protected from them by different **defense systems**. A naturally existing **barrier**, such as your **skin**, is one type of defense against disease.

Inflammation is another general defense system that is activated when pathogens enter the body.

A third type of defense is the **immune response**, which is a very **specific cellular response** to disease.



Natural Barriers to Disease

The human body protects itself with **non-specific defense systems** that react naturally and automatically to invading organisms. Your **skin**, with its layers of **protective tissue**, is a very strong, watertight barrier to environmental pathogens. Another example is in your **respiratory tract**, where **mucus** and **cilia** help trap pathogen particles and move them up to your throat, so you can cough and expel them.

Inflammation

Sometimes **pathogens** are able to move past natural barriers and enter the body. When body cells are damaged, then **inflammation** occurs. The signs of **inflammation** (heat, swelling, redness and pain) reflect the body's general response to an injury or pathogen.

