

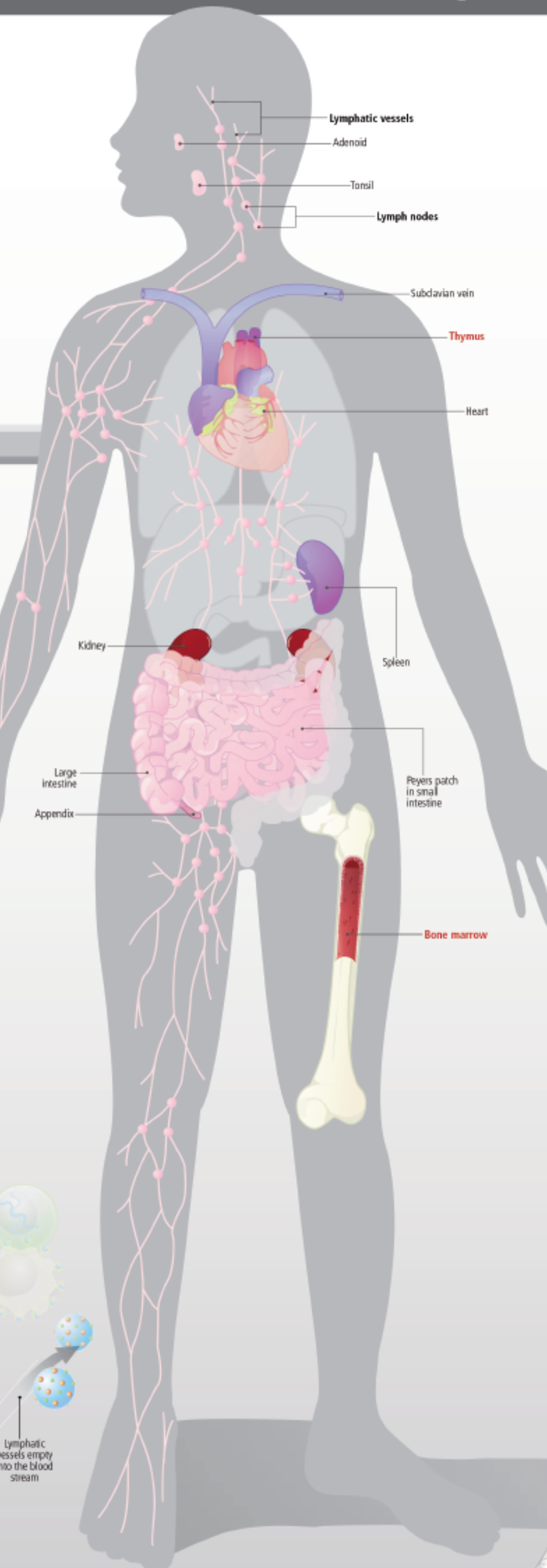
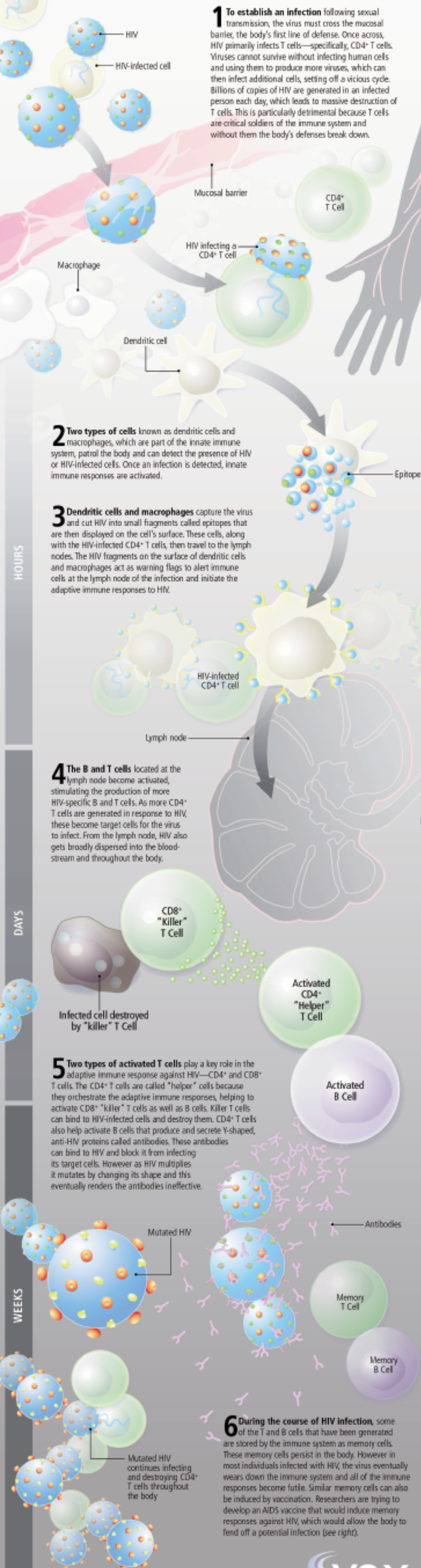
Understanding the Immune System and AIDS Vaccine Strategies

HUMANS ARE REPEATEDLY EXPOSED to various disease-causing organisms known as pathogens, including viruses and bacteria, which pose a threat to their health. The body defends itself against these foreign invaders using an incredibly complex network of cells, molecules, tissues, and organs, which together make up the immune system.

There are two categories of defenses the immune system uses to combat pathogens: innate and adaptive. The innate immune responses are the first responders against an invading virus, acting within hours. These responses are not specific, so whether the pathogen is a cold virus or HIV, the response will be very similar. Innate immune responses don't always clear an infection. Instead they help control the virus until the adaptive immune responses are ready to kick in. The adaptive immune responses take days to weeks to activate, partly because they are produced in response to a specific pathogen. Adaptive responses are further divided into two types: cellular and antibody responses.

The adaptive immune responses are orchestrated by two main classes of cells: B cells, which produce antibodies, and T cells, which conduct cellular immune responses. B and T cells are generated in the bone marrow and thymus (shown in red) and from there migrate throughout the body. They mature in the lymph nodes, spleen, and the mucosal tissues that line the intestine, nasal, respiratory, and genital tracts. B and T cells travel between tissues and organs using a network of vessels known as the lymphatic system. Lymph nodes occur where lymphatic vessels converge and are the communication hubs where different cells of the immune system meet and greet.

HOW HIV INTERACTS WITH THE IMMUNE SYSTEM



CURRENT STRATEGIES IN AIDS VACCINE RESEARCH

Vaccines are a highly effective way to train the immune system to combat pathogens. Scientists only began studying the immune system after the concept of vaccination was discovered. Researchers are currently exploring multiple strategies in an effort to develop an effective AIDS vaccine.

