

Lymphatic vessels in health and disease

Timothy Padera

E.L. Steele Laboratories for Tumor Biology, Department of Radiation Oncology, Massachusetts General Hospital, Harvard Medical School, Boston, MA USA

Lymphatic vessels are responsible for draining interstitial fluid from tissues and for transporting immune cells to lymph nodes to maintain the body's immune surveillance. Thus, lymphatics are important in maintaining both tissue fluid balance and proper function of the immune system. Predictably, disruptions of the lymphatic system lead to lymphedema and the conditions for chronic infections. Lymphatic vessels also facilitate the dissemination of cancer cells from a primary tumor to regional lymph nodes. Here we will discuss how normal lymphatic function is controlled during normal physiological conditions using insights from intravital microscopy and mathematical modeling. We will then explore how different pathological settings, including bacterial infections, can disrupt lymphatic pumping. We will show how bacterial infections can cause permanent damage to collecting lymphatic vessels and long-term disruption of lymphatic function.