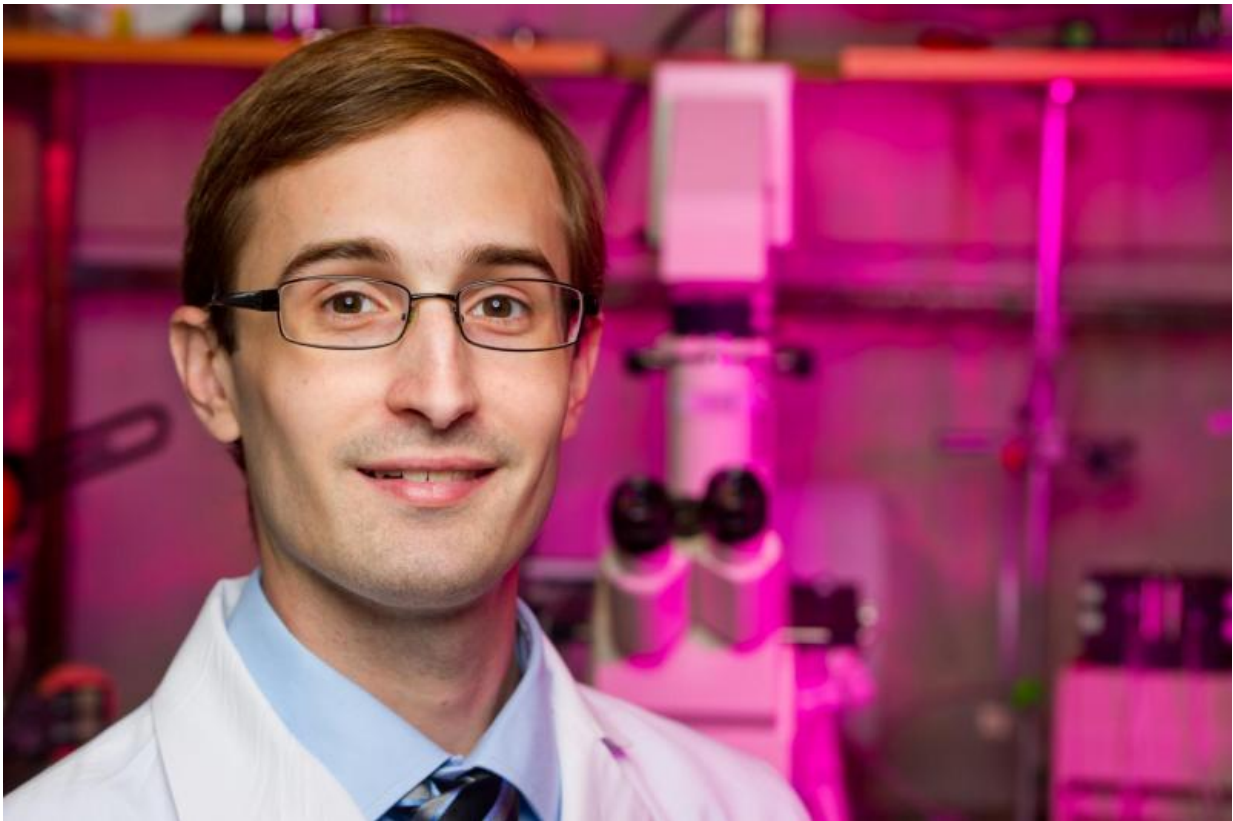


Impact of Type 2 diabetes on lymphatic vessels identified

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A study by University of Missouri researchers, led by Joshua Scallan, Ph.D., a research assistant professor of medical pharmacology and physiology, has identified for the first time how Type 2 diabetes affects lymphatic vessels. It is a finding that could lay the groundwork for new therapies to improve the lives of people with the condition. Credit: Justin Kelley/MU Health System

Approximately 28 million Americans live with Type 2 diabetes, a condition characterized by high blood sugar levels. Until now, the disease's effect on the body's lymphatic vessels has been unknown. A study by University of Missouri researchers has identified for the first time how the condition affects lymphatic vessels—a finding that could lay the groundwork for new therapies to improve the lives of people with Type 2 diabetes.

"The lymphatic system's primary role is to transport lymph—a clear fluid that contains white blood cells that help rid the body of antigens or destroy cancer cells—to lymph nodes where immune responses are activated," said Joshua Scallan, Ph.D., a research assistant professor of medical pharmacology and physiology at the MU School of Medicine. "We now know for the first time that when individuals have Type 2 diabetes, the walls of their lymphatic vessels are defective and become increasingly permeable, or leaky."

Scallan likens the permeability of a healthy lymphatic vessel to a porous garden hose, which is designed to allow water to escape through small holes in the hose. However, a lymphatic vessel in a person with Type 2 diabetes is like a porous garden hose that has been drilled with large holes, letting too much water escape. When the lymphatic vessel is too permeable, lymph and antigens are not transported to the [lymph nodes](#).

Studying lymphatic vessel function in animals has been a challenge for researchers, because unlike blood vessels, [lymph vessels](#) are clear and appear almost invisible. However, Scallan developed a new investigative method to measure lymphatic vessel permeability and found that the vessels in Type 2 diabetes produced [nitric oxide](#) levels much lower than healthy lymphatic vessels.

"When an individual has Type 2 diabetes, cells in the lymphatic vessels aren't producing enough nitric oxide, which is essential to maintaining

the integrity of their endothelial layer so that they function properly," Scallan said. "We found that by giving the [lymphatic vessels](#) L-arginine, an amino acid commonly found in red meat, poultry, dairy products and nutritional supplements, we were able to boost their nitric oxide production and restore their ability to act as a barrier."

While more studies are needed, Scallan is hopeful the findings could lead to further research for developing new treatments or therapies for individuals with Type 2 diabetes.

Provided by University of Missouri-Columbia

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