

# COLLECTING LYMPHATIC VESSEL PERMEABILITY TO ALBUMIN AND ITS MODIFICATION BY NATRIURETIC PEPTIDES

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## ABSTRACT

Microvascular exchange is the process whereby the blood provides the tissues of the body nutrients for cellular metabolism, macromolecules essential for fighting infection, and waste removal. However, these constituents and the water carrying them cannot be constitutively reabsorbed by the blood vessels, necessitating an outflow pathway to prevent edema – the lymphatic vasculature. Despite its importance to overall fluid balance, immune responses, and lipid absorption, the mechanisms whereby macromolecules and water are transported *to* and *from* the lymphatic vessels had not been determined; i.e. the permeability of the lymphatic vessels was unknown.

This dissertation is a test of the global hypothesis that lymphatic vessel permeability to protein and water does not differ from that of the venules, by virtue of lymphatic and venular endothelia sharing a common origin, and likely function.

The data demonstrate that collecting lymphatic vessels are permeable to protein, which diffuses into the tissue under basal conditions, and that peptides released during disease alter lymphatic permeability in a compensatory manner. In conclusion, the lymphatic vasculature plays a prominent, unrecognized role in microvascular exchange with several implications for fluid homeostasis.