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Molecular Transport across Small Blood Vessels[1] AXEL GUENTHER, ZHAMAK ABDIDEZFOOLI, SASCHA PINTO, STEFFEN-SEBASTIAN BOLZ, University of Toronto — Small blood vessels dominate molecular transport of small and large molecules due to their large cumulative surface area. However, systematically probing specific transport mechanisms under well defined and physiologically meaningful conditions is challenging. We present the first microfluidic approach that allows the investigation of molecular transport across intact small blood vessels. Functionally intact mouse mesenteric arteries (150-300 micrometers in diameter) are perfused with fluorescent markers. The permeation rate across the vessel wall is locally deduced by laser scanning confocal microscopy and particle image velocity measurements in combination with a transport model, and by a global fluorescence spectroscopy measurement.

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