Biological tissue requires the delivery of nutrients and gases that are necessary to keep the tissue healthy and functioning correctly. These nutrients and gases are delivered through a network of blood vessels in the tissue, which is also known as the microvasculature. When biological tissue becomes diseased, the structure of the tissue changes and as a result it no longer functions correctly. One of the ways we could gain a better understanding of how and why the tissue is changing is to study this network of blood vessels and see how it also is changing. We have developed a method called "optical histology" that allows us to create a highly detailed, three-dimensional map of the blood vessels in tissue. We present in our manuscript maps of the blood vessels in 1 mm thick slices of mouse brain. We believe this technique could potentially be used to generate a three-dimensional map of the blood vessels in an entire organ.

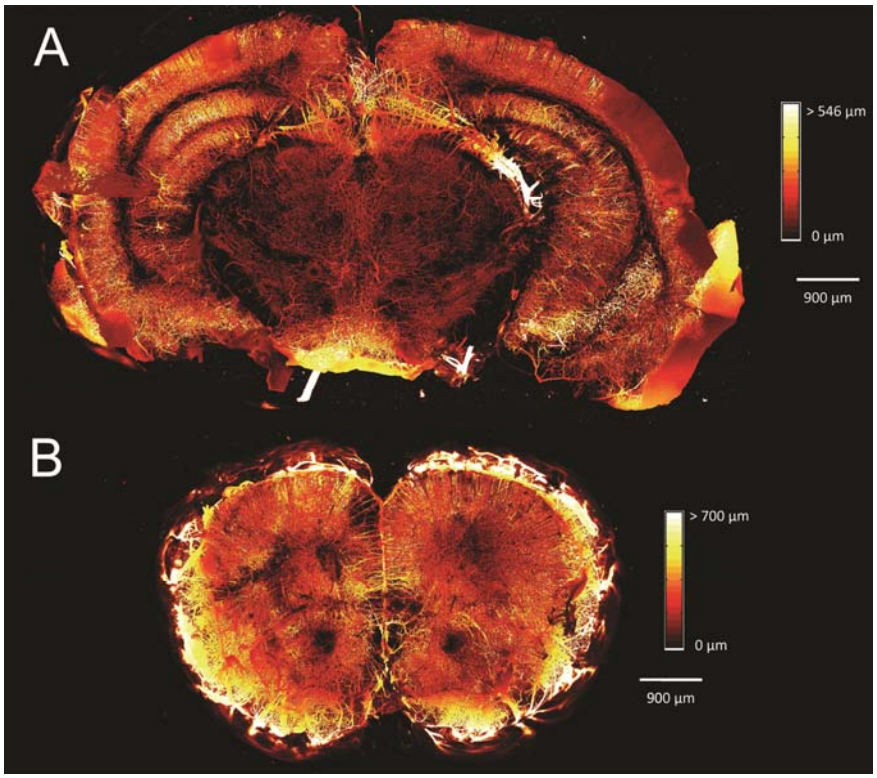

Figure: (a) A map of the blood vessels in a brain slice. In this slice, we can see blood vessels to as deep as 850 µm in the tissue. Blood vessels at each depth are assigned a specific color, allowing three-dimensional visualization of microvasculature in a two-dimesional map. (b) Map of the blood vessels in a different brain slice with a similar color-coding scheme, which can be seen up to a maximum depth of 820 µm into the tissue