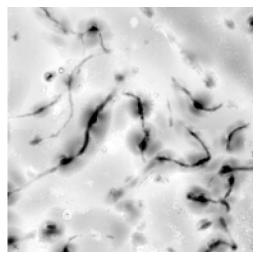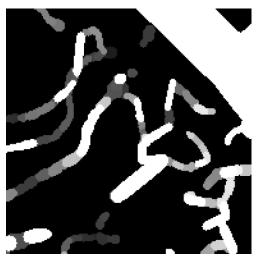**original**

energy

vertices

edge centerlines

edge volumes

S1_Fig: Example projections of original two-photon image, intermediate outputs, and vector renderings of manually assisted SLAVV applied to Image 2. The vectors extracted from endothelial label are similar to those from lumen label (see Fig 2A).