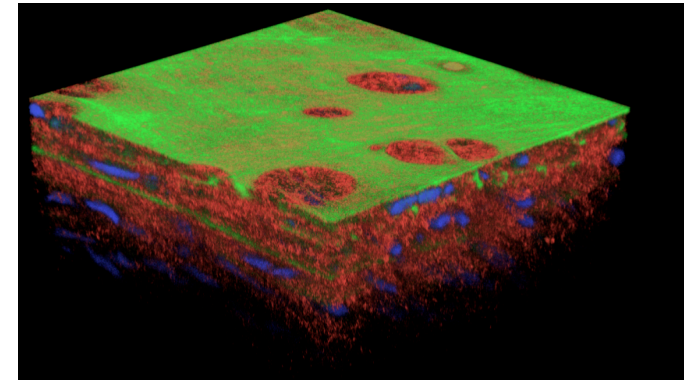


# Image-Based Multi-Scale Modeling



- **Goal**
  - Pave the way to a *systematic* construction of material constitutive models from images
- **Current state of the art**
  - Phenomenological models, valid on a small range of deformations
  - Hard to distinguish between healthy and diseased tissue
- **Challenges**
  - Tissue component identification
  - Nonlinear homogenization
  - Parametrization of a function in a high-dimensional space
- **Dissemination**
  - Library of types of “tissue”
    - Example: Healthy and diseased vessels



Normal Lamellar Structure of Rat Aorta (Taylor, 2005)