

**Vasculata 2009**  
**Description of courses for practical workshop**

- I. Isolation and functional assays using vascular cells:
  1. Ex vivo sprouting and cord formation angiogenesis assays in collagen and matrigel using mouse and human endothelial cells. Quantitative analysis of angiogenesis in vitro using custom-made imaging programs.
  2. Isolation of primary mouse endothelial and smooth muscle cells (endothelial cells will be isolated from two sources: aorta and lung), cell culture and passaging.
  3. Endothelial migration and adhesion assays using wound assay and modified Boyden chambers.
  
- II. Angiogenesis models: hind limb ischemia, tumor and wound angiogenesis
  1. Hind-limb ischemia model of arteriogenesis in mice: surgery, Doppler flow measurements and follow-up tissue processing and staining
  2. Angiogenesis in the wound and tumor
  
- III. MicroCT analysis of vasculature  
Micro CT analysis of vasculature: perfusion techniques, data acquisition and analysis
  
- IV. Mouse models in atherosclerosis research:
  1. Animal Models of atherosclerosis: ApoE null mice, diet specifics, lipid profiling.
  2. Analysis of vascular lesions in ApoE null mice: staining and quantification.

Participants can choose one or two *in vivo* techniques from courses I, II or IV. Details of most methods are described in the following publications:

1. Refs.: Mahabaleshwar, G.H., and P.R Somanath, **T.V. Byzova**. "[Methods for isolation of endothelial and smooth muscle cells and in vitro proliferation assays.](#)" *Methods in Molecular Medicine* 129 (2006): 197-208.
2. Mahabaleshwar, G.H., and **T.V. Byzova**. "[Vascular integrin signaling.](#)" *Methods of Enzymology* 443 (2008): 199-226.
3. Podrez, E.A., and **T.V. Byzova**, M. Febbraio, R.G. Salomon, Y. Ma, M. Valiyaveetil et al. "[Platelet CD36 links hyperlipidemia, oxidant stress and a prothrombotic phenotype.](#)" *Nature Medicine* 13 (9) (Sep. 2007): 1086-1095. Comment in *Nature Medicine* 13(9) (Sep. 2007): 1015-1016.
4. Mahabeleshwar, G.H., and W. Feng, D.R. Phillips, **T.V. Byzova**. "[Integrin signaling is critical for pathological angiogenesis.](#)" *Journal of Experimental Medicine* 203(11) (Oct. 30, 2006): 2495-2507.