COLLOQUIA IN PHYSIOLOGY AND VASCULAR BIOLOGY

(Vascular Biology Meeting 2015)

Venue: Medical University Vienna, Spitalgasse 23, 1090 Vienna, "**Jugendstilhörsaal"**

(Johannes Schmid, Tel.: (01) 40160 31155, *johannes.schmid@meduniwien.ac.at*,

Rainer de Martin, Tel.: (01) 40160 31161, *rainer.demartin@meduniwien.ac.at)*

Friday 23.01.2015 09.00 s.t. **Cornelia Halin Winter** (host: R. de Martin)

Inst. f. Pharmazeutische Wiss.
HCI G 474.2.
Vladimir-Prelog-Weg 1-5/10
8093 Zuerich

"Lymphatic vessels in inflammation and immunity"

Cornelia Halin: cornelia.halin@pharma.ethz.ch

Abstract:

Lymphatic vessels are important for tissue fluid homeostasis and for the uptake of dietary lipids in the intestine. Moreover, they are intimately linked with induction of the immune response, as they transport antigen, inflammatory mediators, and leukocytes from peripheral tissues to draining lymph nodes. Research of the last 10 years has revealed that lymphatic vessels form a highly plastic network, which rapidly adapts to inflammation in a stimulus- and tissue-specific manner. Inflammatory changes in the lymphatic network have been shown to impact fluid drainage as well as leukocyte trafficking, suggesting that lymphatic vessels play an active role in the regulation of inflammatory and immune responses. Performing a microarray analysis of lymphatic endothelial cells (LECs) isolated from inflamed and resting murine skin our group has recently generated a comprehensive description of the in vivo inflammatory response of LECs. Guided by these gene expression data our lab has also started to investigate the involvement of various genes with previously unknown expression in LECs in lymphatic vessel biology. For example, we have identified a role for activated leukocyte cell adhesion molecule (ALCAM) and of the interleukin-7 signaling pathway in (lymph)angiogenesis and in lymphatic drainage function. Moreover, our group recently established an intravital microscopy (IVM) model in the murine ear skin to image DC migration into and within LVs. Performing IVM we found that DCs actively migrate and patrol within initial lymphatic capillaries and are only passively propagated by lymph, in direction of the draining lymph node, once they reach larger collecting vessels. We could also identify a first molecule involved in intralymphatic DC migration, namely the Rho-associated protein kinase (ROCK). In our ongoing work we are further elucidating the mechanism and the functional significance of leukocyte migration through afferent lymphatic vessels. For example, we have started to extend our IVM experiments to T cells and find that they display a similar intralymphatic patrolling behavior as DCs. Moreover, we have started to unravel the signals that guide intralymphatic DCs in their migration towards downstream vessel segments and draining lymph nodes.