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" Molecular Control of Cell Polarity in Epithelia and Stem Cell "

Cell polarity of many cell types is controlled by the PAR protein complex consisting of Bazooka/PAR-3 (Baz), PAR-6 and atypical protein kinase C (aPKC). In *Drosophila*, the PAR complex is required for the control of cell polarity in the follicular epithelium, in ectodermal epithelia and neuroblasts. aPKC is the main signaling component of this complex that functions by phosphorylating downstream targets, while the PDZ domain proteins Baz and PAR-6 control the subcellular localization and kinase activity of aPKC. In my talk I will address the following questions: How is the PAR complex localized to the plasma membrane? Is the kinase activity of aPKC essential for all of its functions in different cell types? How does phosphorylation of Baz by aPKC affect the subcellular localization and function of Baz? Is the proper regulation of vesicular trafficking essential for cortical polarity in neuroblasts?

Altogether, our work demonstrates that the components of the PAR complex function in a highly tissue-specific manner, which reflects a variety of mechanisms of how polarity is established and maintained in different cell types. In the future it will be very important to unravel the regulatory interactions between kinases, phosphatases and individual members of the PAR complex to understand how posttranslational modifications regulate the affinity of PAR complex components towards each other and towards additional binding partners. We propose that the composition of the PAR complex is regulated in a very dynamic fashion and may differ considerably between different cell types.

Wednesday, June 12, 2013 at 12:00 noon
Ramsay Wright Building, Room 432

Host: Prof. Ulrich Tepass <u.tepass@utoronto.ca>

Video Conferencing at UTM (DV 4001) & UTSc (MW 229)