
# Dominik Filipp

*dominik.filipp@img.cas.cz*

**Laboratory of Immunobiology**

Innate immune receptors, TCR signalling, Fyn, Lck


## Research topics

The main research interest of our recently established group is focused on two independent topics:

- Molecular and functional characterization of innate immune receptors (IIRs) and signalling molecules involved in the processes of sterile inflammation, developmental tissue remodelling and chronic inflammatory diseases. Our main effort is focused on Toll-like receptors (Fig. 1) and the identification of their putative endogenous, self-derived ligands. Data accumulated in this study point to spatially and temporarily regulated expression of IIRs in early stages of mammalian embryogenesis (Fig. 2) and suggest their role in the process of embryonic homeostasis.

- Characterization of molecular mechanisms underpinning temporal and spatial coordination of two Src-family tyrosine kinases, Lck and Fyn, during the initiation of membrane proximal T-cell signalling (Fig. 3 and 4). Previous data provided a basis for formulation of the Lck-dependent Fyn activation model featuring the translocation of activated Lck into lipid rafts and subsequent activation of lipid rafts-resident Fyn. Our recent structure-function analysis identified *cis*-acting structural elements of Lck critical for partitioning to LR and transphosphorylation of Fyn kinase domain when co-localized in LR.

### Current grant support

GA AS CR (IAA500520707)

### Selected recent papers

So far no papers (a newly formed group)

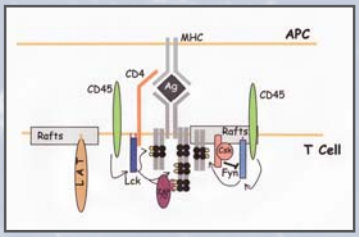


*Fig. 3. A hypothetical scheme of functional interrelation of Lck and Fyn kinases during the process of TcR/CD4-induced proximal signalling*

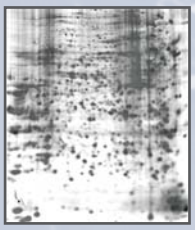

*Fig. 4. 2-D gel electrophoresis approach allows us to identify putative targets of Src-family tyrosine kinase Lck which could play an essential role in an active process of Lck translocation to lipid rafts.*

*Dominik Filipp, PhD / Head of Laboratory*
*Jana Jelínková, PhD / Research Scientist*
*Aleš Neuwirth, MSc / Research Assistant*
*Anežka Fišerová, MD / Research Assistant*
*Ondřej Ballek, Bc / Diploma Student*
*Tereza Vavrochová / Diploma Student*

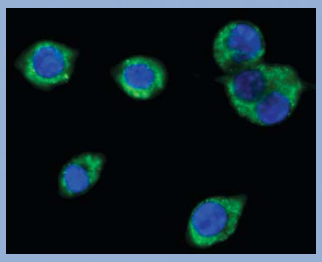

*Fig. 1. Fluorescent microscopy of innate immune cells stained with DAPI (blue, nuclei) and Alexa 488-conjugated antibody specific for Toll-like receptor 4 (green)*

*Fig. 2. Wholemount in situ hybridization of 8.5-day-old mouse embryo with an antisense probe specific for TLR4 revealing the expression in embryonal head structures*