

Introduction of the defendant RNDr. Helena Horká by the Ph.D. thesis supervisor Jan Kopecký

I have known Helena since 2005, when she started to work on her MSc. diploma work under my supervision. The subject of her diploma work was "The real-time PCR usage in monitoring the saliva-activated transmission of *Borrelia* spirochetes". In that time she introduced real-time PCR into the laboratory and demonstrated saliva-activated transmission (SAT) in the skin of infected mice. Tick saliva-activated transmission became also the main subject of Helena's Ph.D. thesis. Gradually she became the main expert in *Borrelia* quantification by Real-time PCR and in *Borrelia* transmission experiments. This fact made her an indispensable person not only for our lab, but also for other labs dealing with ticks and transmitted pathogens. In addition to *Borrelia* transmission experiments, Helena was also engaged in the immunology of tick-host interactions, mainly in the studies of immunomodulatory effects of tick saliva. After leaving of Jiri Salat, she is also the most competent person in working with the flow cytometer.

In my opinion, Helena was the first, who demonstrated the tick-saliva activated transmission of *Borrelia* spirochetes in detail. And by virtue of her results, sialostatin L2, a cystatin derived by Michalis Kotsyfakis from saliva of the tick *Ixodes scapularis*, has been proved the second known *Borrelia* SAT factor. She also made a significant contribution to another cystatin paper, dealing with the structural and functional characterization of this immunomodulatory molecule, which vaccine potential has been shown.

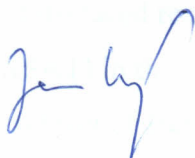
During her Ph.D. studies she addressed Prof. Edgar Schmitt from the Institute for Immunology, Johannes Gutenberg-University in Mainz, Germany and this choice showed to be very good. During her visit in Mainz she demonstrated the strong suppressive effect of tick saliva and saliva-derived cystatin sialostatin L on the production of IL-9 by the recently characterized Th9 subset which plays a substantial role in the development of allergic asthma. Subsequently, the curative effect of sialostatin L on experimental asthma was proved in a murine model. The manuscript based on these results was submitted to Journal of Immunology. In such a case I am always happy that a molecule derived from awful ticks can be potentially applicable for the treatment of human disorders.

I found Helena very responsible, intelligent, highly motivated and hardworking student with good amount of laboratory skill. She was always ready to teach and help anybody who needs it. She was capable of creative thinking, designing experiments, carrying them out,

interpreting the results and discussing them critically. She was fully competent to write a scientific paper, to reflect on the recommendations of referees etc.

In my opinion, she proved her ability to become an independent scientist.

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