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### **Eco-epidemiology of tick-borne zoonotic agents in Central Europe.**

After the mosquitoes, ticks are the second most important vectors of infectious agents. Most of these agents cause zoonoses, the diseases that primary infect animals and by the competent vector or in some circumstances by other routes of infection can be spread to humans. In the last decades the spread, emergence or re-emergence of serious infectious diseases with different etiology is observed as a consequence of a number of changes (climate, socio-economic, social, etc.). For such diseases there was established the term „emerging diseases“.

In our laboratory the research is aimed on the continuous studies of distribution and seasonal dynamics of the epidemiologically most important ticks in Central Europe, *Ixodes ricinus* and its infection with the bacterial pathogens of medical and veterinary importance with the impact on *Borrelia burgdorferi* sensu lato and *Anaplasma* spp. Furthermore we have screened ticks and hosts for the presence of newly emerging tick-transmitted bacterial agents such as *Borrelia miyamotoi* and *Candidatus Neoehrlichia mikurensis*. All detected bacteria are closely characterized by genetic methods to resolve the phylogenetic relationships and association with the vectors and reservoir hosts.

One of the goal is to understand the ecological and evolutionary relationships and causes of intra and inter specific variability in connection to the hosts and their parasites and to closely characterise pathogen vector host interactions in natural foci as well as in experimental models.