Safe diagnostics for control of zoonotic pathogens – A new test system for *Coxiella burnetii*

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Coxiella burnetii, the etiological agent of Q-fever, causes mostly asymptomatic epidemics in domestic ruminants nearly all over the world each year. Especially outbreaks in sheep and goats are associated with human cases.

However, since the tools used in routine diagnostics show a wide range of sensitivity and specificity, seronegative shedders are often not detected and cannot be treated.

Therefore, the aim of the project is to develop a point-of-care pen-side test based on monoclonal antibodies.

For this purpose, open reading frames, coding for potentially immunogenic *C. burnetii* proteins are amplified, cloned and expressed. The obtained proteins are tested for their immunogenicity in western blot and ELISA with Q-fever positive and negative field sera from sheep, goats and cattle.

In addition, the typical host cells of *C. burnetii* (human monocytes, ovine trophoblasts) will be infected. By sequencing mRNA the transcription profile of these bacteria will be compared with those of axenic (cell-free) media. This will support our knowledge of the pathogen-host interactions at the gene expression level.

Until now, proteins that could provide the basis for the production of monoclonal antibodies have been expressed and purified. They are currently being screened with positive and negative field sera.

In addition, time points for RNA isolation and sequencing have been determined. For this, growth curves, that allow conclusions about replication rates of Coxiella under different conditions, have been plotted.

This mobile test system should enable the direct and rapid detection of infected animals in the field. Thus reduce the further spreading as well as the severe economical and substantially ecological losses.