Research project IZS VE 12/12

Identification of paratuberculosis-associated blood miRNAs in cattle

Project coordinator: Nicola Pozzato

Paratuberculosis (Johne's disease, JD) is a chronic, lepromatous enteritis of ruminants caused by Mycobacterium avium subsp. paratuberculosis (MAP). JD is responsible for considerable economic losses to the dairy industry and is spread mainly via faecal shedding. The control of JD is hampered by inadequate diagnostic tools that fail to reveal infected (not infectious) animals before they enter the subclinical infectious stage of the disease.

MicroRNAs (miRNAs) are short, non-coding RNA molecules that regulate gene expression at the post–transcriptional level. Altered miRNA expression patterns indicate dysregulation of important biological processes and recent studies have demonstrated unique miRNA expression signatures in different diseases, suggesting the potential role of miRNAs as novel diagnostic biomarkers.

In this study, dairy cattle from JD affected farms will be blood sampled and examined for 2 years to identify infected animals that develop the infectious stage of JD. We will then retrospectively analyse blood miRNA profiles from these animals to characterize both the infected and infectious stages of JD. The identification of JD-associated miRNAs will allow assessing the diagnostic and preventive potential of this class of molecules.