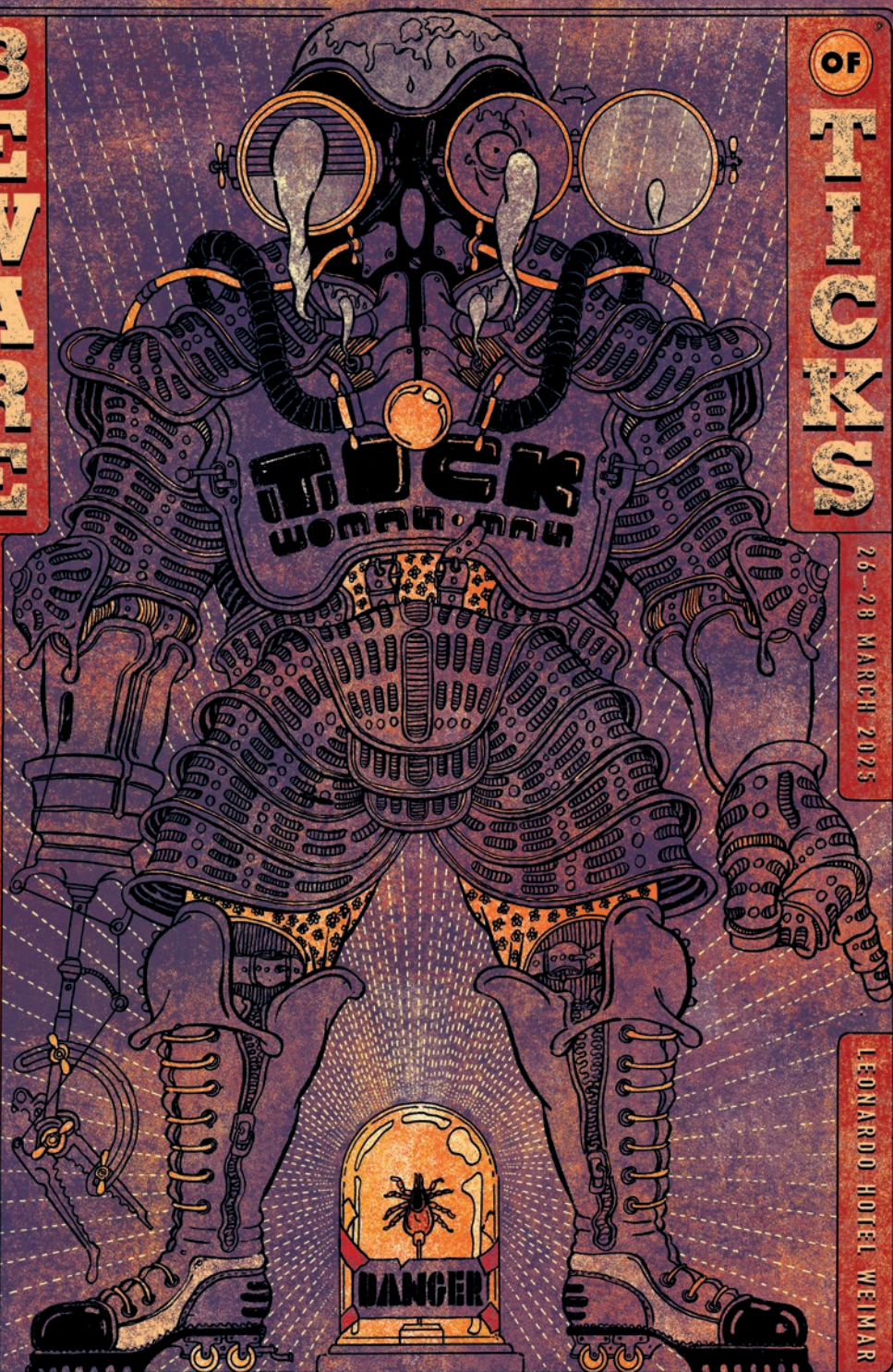


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LEONARDO HOTEL WEIMAR



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Molecular characterisation of *Theileria* species in bovine theileriosis in Zimbabwe

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Several species of the tick-transmitted apicomplexans of the genus *Theileria* infect cattle and wildlife in eastern and southern Africa. *Theileria* (*T.*) *parva*, the most important economically, is the cause of a disease that is a heavy burden for livestock production in Zimbabwe. In recent years, the spatio-temporal patterns of theileriosis outbreaks have changed. Investigating the causative *Theileria* species and strains is key to understanding the infection process and adapting control measures. Samples were collected from suspected bovine theileriosis cases (n=158) in three provinces from November 2020 to April 2021. Frozen blood samples (n=147) and organs (n=22) were tested by a combination of pan-*Theileria* 18S rRNA PCR, specific *T. parva* PCR and Sanger sequencing to determine the *Theileria* species present. *Theileria* was detected in 83.3% of the sampled clinical cases. *Theileria parva* (63%), *T. velifera* (24%), *T. taurotragi* (2.3%), *T. mutans* (2.3%), and co-infections (3.1%) were detected in the positive samples. To characterise the *T. parva* strains, we sequenced the sporozoite surface antigen *p67* and the CD8+ antigens *Tp2* from 44 and 23 of the *T. parva* positive samples, respectively. Phylogenetic analysis showed that the *T. parva* present was cattle-derived, closely related to the Kenyan Muguga isolate which is part of the widely used *T. parva* vaccine cocktail. Dried blood spots (n=145) and faeces (n=87) were also screened by the 18S rRNA PCR to evaluate their suitability in *Theileria* diagnosis. Sensitivity was less in dried blood spots (59.3%) and faeces (12.7%) than frozen blood, whilst the specificity for blood spots and faeces was 64% and 85.7%, respectively. The use of non-invasive samples such as faeces can however be suitable to study the circulation of *Theileria* at population level, e.g. in a wild animal population. Overall, our data contribute to the knowledge of *Theileria* species circulating in Zimbabwe, informing control strategies and guiding future research.