



# Antibody response of domestic animals to *Phlebotomus orientalis* bites

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## INTRODUCTION

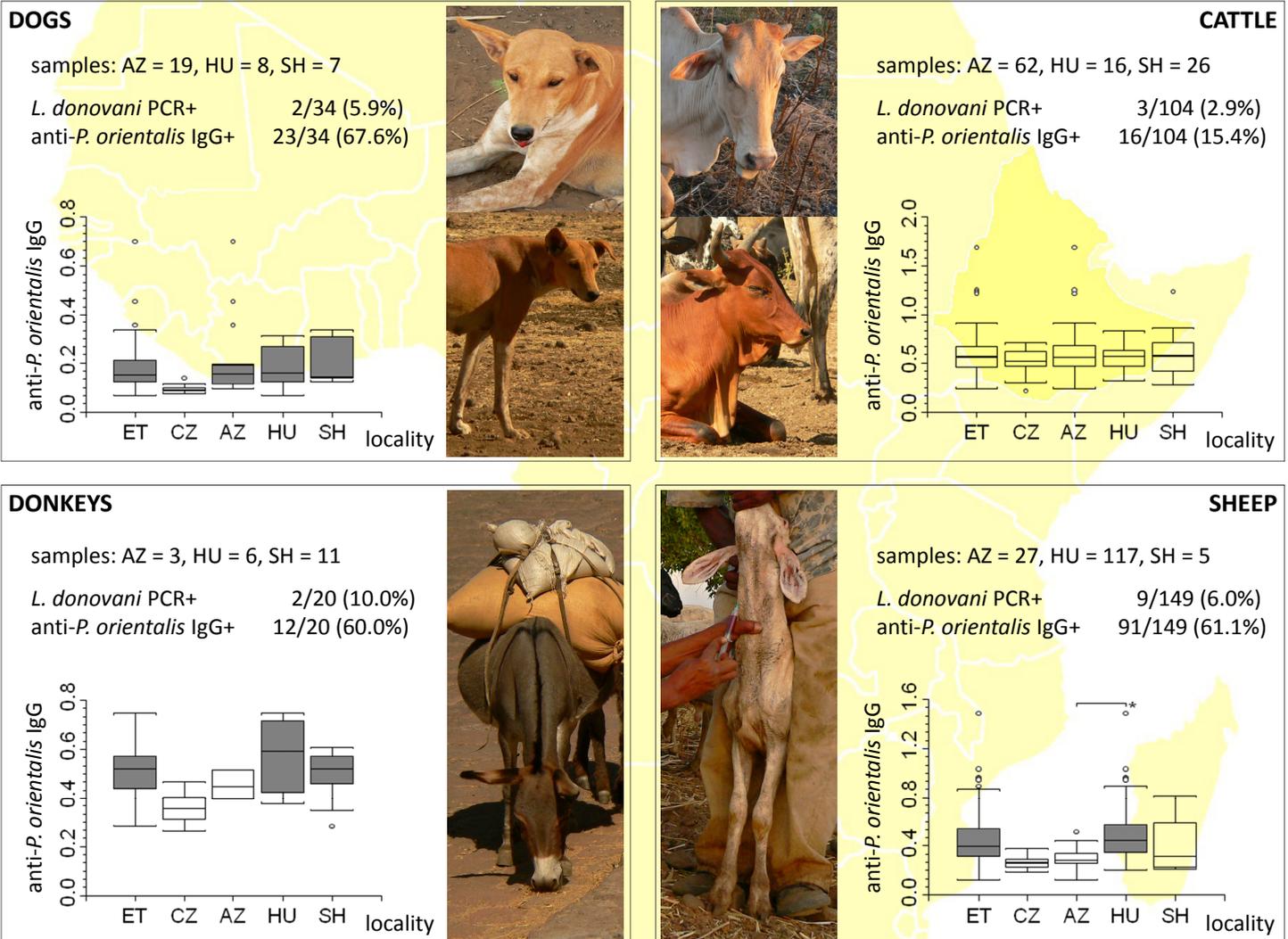
Parasites from the *Leishmania donovani* complex cause human visceral leishmaniasis (VL), also known as kala-azar, which is fatal if left untreated. The annual case-fatality rate is estimated to be 59,000 deaths. In Ethiopia, the incidence is estimated to be 4,500 cases, with endemic areas in the lowlands of the northwest, central, south and southwestern parts of the country. The strategy to control VL still mostly relies on anti-vector interventions together with rapid and effective diagnosis and treatment.

The optimal strategy for the disease control depends on our understanding of the VL epidemiology. Leishmaniasis caused by *L. donovani* is believed to be an anthroponosis. However, the closely related *L. infantum* is a zoonosis with wild canids and domestic dogs as the main reservoirs. Recently, several *Leishmania*-infected animal species have been reported from *L. donovani* foci, including both wild and domestic animals, indicating the need of more complex intervention than if humans are the only hosts.

Our study was focused on the role of domestic animals in three VL foci in northwestern Ethiopia: Metema-Humera lowlands, Addis Zemen, and Sheraro. The domestic animals were screened for *Leishmania* DNA in the peripheral blood in search for infection. To reveal attractiveness for the sand fly vector, antibodies against *P. orientalis* saliva were used as a sensitive and specific marker of exposure.

## RESULTS

Figure legend: ET, Ethiopia; CZ, Czech Republic; HU, Humera; AZ, Addis Zemen; SH, Sheraro; grey box, significant differences compared to Czech controls; \*, differences between Ethiopian localities.



## SUMMARY & CONCLUSION

Anti-*P. orientalis* IgG antibodies were found in various animal species tested, suggesting that domestic animals are important source of blood for the vector. This also indicates opportunistic feeding behavior of *P. orientalis*. The highest seropositivity was found in dogs, sheep, and donkeys. Anti-*P. orientalis* IgG antibodies proved to be an appropriate marker of exposure for dogs and sheep but seems to be less suitable for donkeys and cattle due to the high background in control sera.