

# Reduced *Eimeria* and pinworms loads in hybrid mice of the European house mouse hybrid zone

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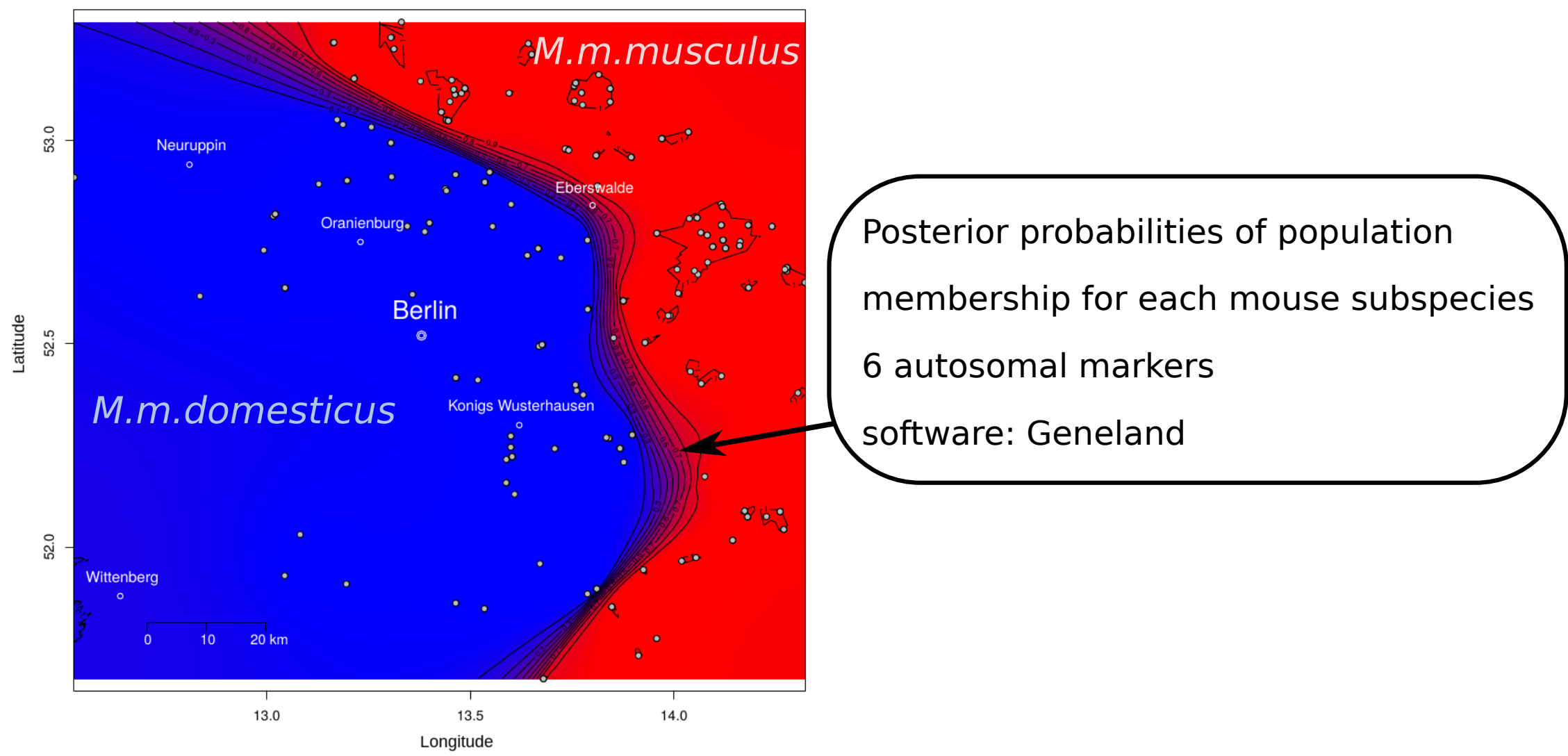
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## General

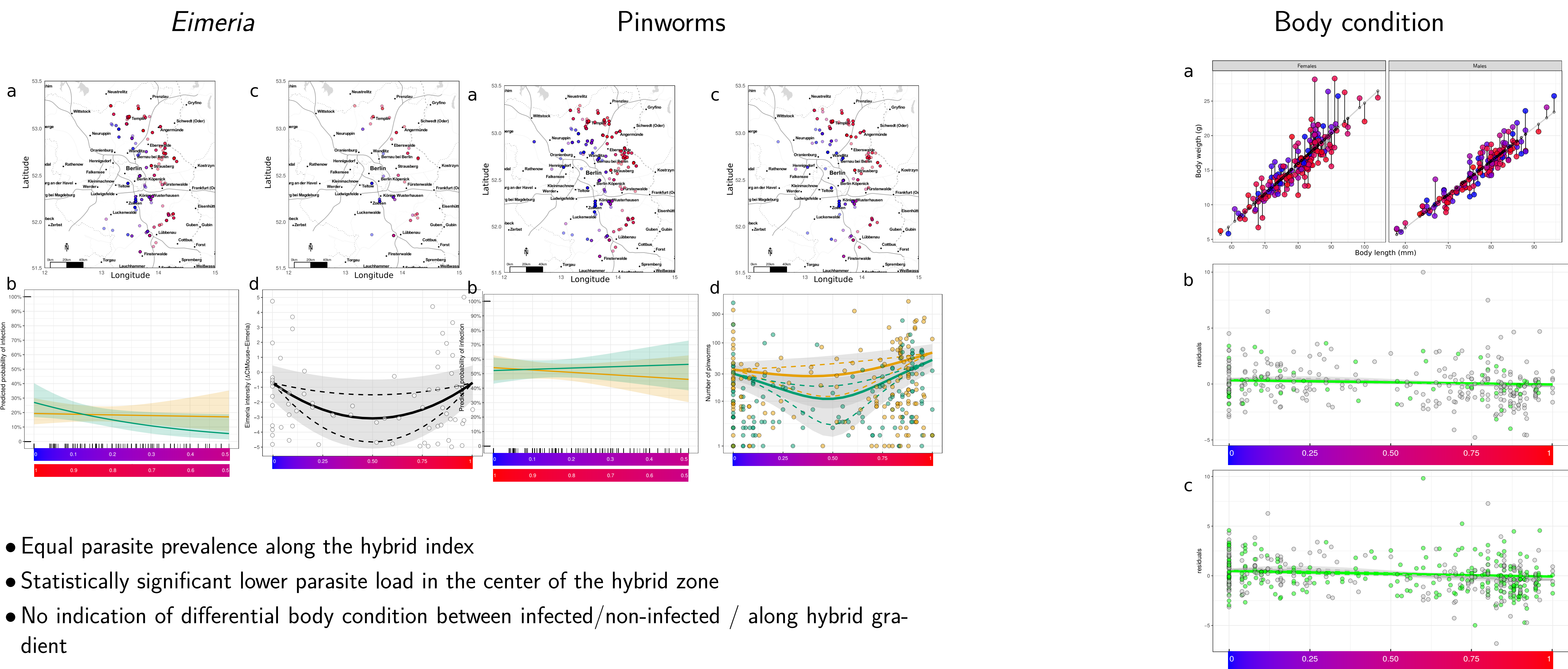
- Parasite models:
  - Eimeria* spp., obligate intracellular parasite (Apicomplexa: Coccidia). **High impact on host health expected**
  - Pinworms (*Aspiruluris tetraptera* and *Syphacia obvelata*). **Low impact on host health expected**
- Host model: *Mus musculus domesticus*, *M. m. musculus* and their hybrids
- Aim of the study: **Investigating hybrid susceptibility/resistance of house mice to parasites presenting different pathogenicity, using prevalence and intensity data in a new transect of the European house mouse hybrid zone**

## Material & Methods

- Sampling 660 mice over 4 years; Host genotyping (4-14 diagnostic markers) on a 0 to 1 scale (equal admixture hybrids = 0.5)
- Eimeria* load estimated by quantitative PCR
- Pinworm load estimated by count
- Modellisation of parasite load along hybridization index, test hybrid effect by maximum likelihood
- Logistic regression presence/absence of parasite in direction of the hybrid zone center
- Body condition = residuals body length/body weight. Modellisation of body condition along hybridization index, test hybrid effect by maximum likelihood, test difference between infected/non-infected



## Results: *Eimeria* spp. and pinworm load lower in hybrids than in parental mice



## Conclusion

- Increased resistance of hybrid mice compared to parental strains for both lower pathogenic parasite (pinworms) and high pathogenic one (*Eimeria*)
- Control for density troughs: no evidence of a lower parasite prevalence in the centre of the hybrid zone (exclude external ecological epidemiological factors)
- Independance** of hybrid resistance from the parasite pathogenicity level

## References

Balard *et al.* (unpublished) Reduced *Eimeria* and pinworms loads in hybrid mice of the European house mouse hybrid zone  
R package used for modelling: Balard, A., and E. Heitlinger. 2019. Alicebalard/parasiteLoad DOI: 10.5281/zenodo.2535547

