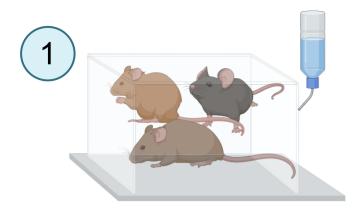
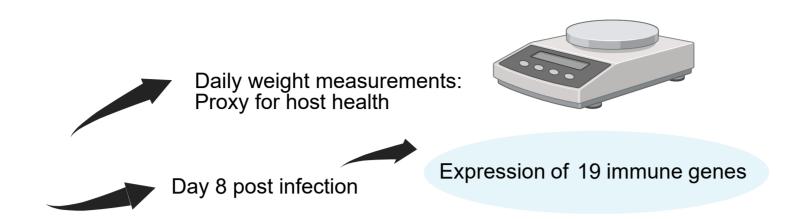
Experimental infections

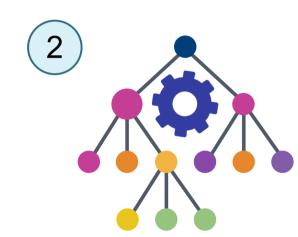


Wild-derived mice strains infected with two strains of Eimeria spp.

n = 136



Random forest training



Training data:

Laboratory infection experiments

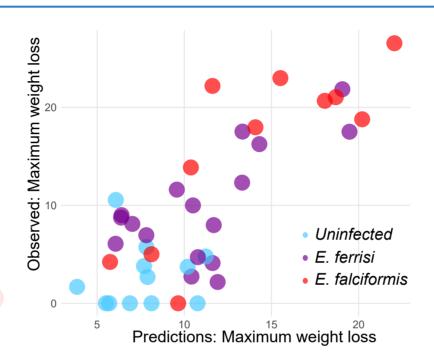
Independent variables:

19 immune genes

Dependent variable:

Relative weight-loss

r = 0.79, p < 0.0001 43.6% variance explained



Application and proxy validation

Uninfected

Infected with

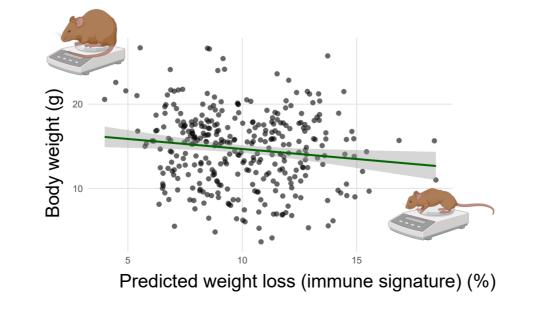
Eimeria spp.



15

Predicted weight loss

Immune signatures are significantly associated with biological signals such as body weight at capture, infection presence and infectious species

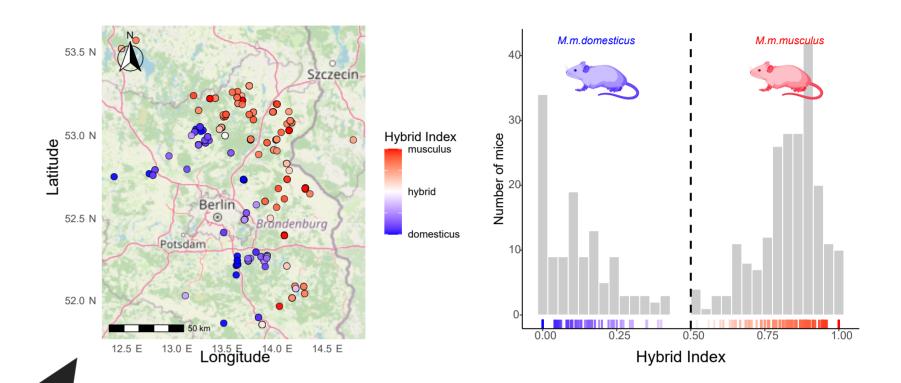


Application case:

European House Mouse Hybrid Zone



where hybrids exhibit lower parasite loads

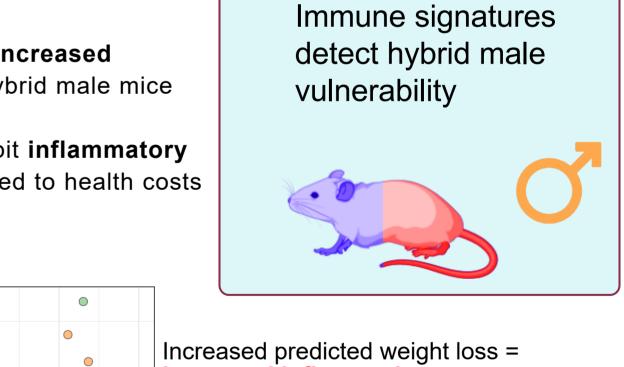


We predict increased weight loss in hybrid male mice

Hybrid males exhibit inflammatory immune states linked to health costs

0.5

0.75



Increased predicted weight loss = increased inflammation

low predicted weight loss = lower inflammation