

# Immune function boosted by life in the wild

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Life in a demanding environment with limited resources might be better for the immune system than living in comfort, according to new research from the University of Bristol.

Professor Mark Viney and colleagues compared the immune function of wild [mice](#) who have to find their own food with that of mice bred in captivity who have all food and lodging provided for them.

The study found that, by most measures, the wild mice had greater immune function. It also found that immune function was substantially more variable among the wild mice.

Professor Viney said: “We might be seeing an effect rather like that in the story of the Town Mouse and the Country Mouse where different environments provide different types of challenge to individual animals and cause them to adapt and respond differently.”

The mice have to choose how much of their limited resources (energy, nutrients and so on) to allocate to various aspects of life such as competing for food and for mates, reproduction, maintaining body condition and immune function.

Different environments lead to different resource allocation ‘choices’ being made. For example, one (extreme) strategy may be to invest heavily in immune function to prolong healthy life: live long and safely. An alternative extreme may be to ‘gamble’ all resources into fast reproduction, rather than investing in immune function: live fast and riskily.

Professor Viney concluded: “As a result of these different ‘choices’, we might expect wild animals to have very different immune responses from their captive cousins. Our findings suggest these wild mice are investing in immune responses to live long and safely, and doing so more than the captive mice.”

The next research challenge is to understand why immune responses are so varied and to identify which aspects of an individual animal’s life determines its [immune function](#).

The study is published today in *Molecular Ecology*.

**More information:** Measures of immune function of wild mice, *Mus musculus* by Stephen R. Abolins, et al. [Molecular Ecology](#)

Provided by University of Bristol

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