

'Dirty' wild mice may be more relevant immunology model

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Like humans, mice that live in their natural habitat encounter bacteria and other pathogens that exercise their immune system, yet the lab mice typically used in immunology studies are raised in isolation from most diseases. A study on natural killer cells in wild mice published this week in *Molecular Ecology* examines the hypothesis that the unsterile living conditions faced by humans and wild mice may improve the readiness of the immune system to fight new infections. The findings suggest that the traditional lab mouse research model neglects environmental factors that are needed to fully represent the immune system of mice and humans.

Natural Killer (NK) cells are pivotal players in the onset of important [immune defences](#) in response to vaccines, infections or cancer.

However, essential NK cell actions take place in the lymph nodes, and NK cells are generally not seen in lab mouse lymph nodes unless the animal is exposed to an infection. Humans and domestic animals, on the other hand, harbour NK cells in their lymph nodes at all times. Preben Boysen and colleagues at the Norwegian School of Veterinary Science and the Norwegian Institute of Public Health found that wild mice lymph nodes also had higher numbers of NK cells compared to [lab mice](#), suggesting that these wild mice approximate human immune systems more closely than lab-mouse based immunology studies.

These findings correspond well with a recently proposed hypothesis that NK cells need a microbial priming phase in order to become fully responsive. The increased NK cell activity in wild mice could also reflect the recent discoveries that NK cells carry imprints of previous microbial

encounters and remain for long periods as "memory-like" cells, challenging the previous notion that such cells are normally short-lived [immune cells](#). One important interpretation of these findings is that immunological research in the traditional mouse model may miss out important NK based immune responses, since these important cellular players will not have gone through the microbial priming that would normally occur in a mouse or a human's natural environment.

Provided by Wiley

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