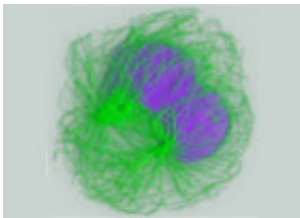


Men and women fight infection differently, study suggests

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A macrophage, showing the nucleus in blue and the microtubules in green.
Credit: MRC NIMR, Wellcome Images.

Female mammals are better prepared to fight infections and their bodies suffer less collateral damage when an infection does hit, according to a new study part-funded by the Wellcome Trust.

Researchers from Queen Mary, University of London, who conducted the study, believe that their results give a biological explanation to the widely observed 'man flu' phenomenon. The study, published in the journal *'Blood'*, focuses on [white blood cells](#), called leukocytes, which patrol the body guarding against [viruses and bacteria](#).

The researchers looked at the number of these cells in healthy male and [female mice](#) and rats. In females they found that levels were consistently higher: females had twice as many, on average, than males.

In addition, they found that these cells differed between [males and](#)

[females](#). In females, they were more sensitive to the presence of bacteria and other infectious agents and more efficient at tackling them.

The research also showed that in females, these cells could eliminate infection without the substantial release of chemicals that further stimulate the immune system. This is crucial because the release of these chemicals in humans is responsible for many of the common symptoms of infection such as tiredness and feeling unwell.

Dr Ramona Scotland, who led the research, explained: "Our experiments demonstrate a profound difference in the way females respond to infectious agents compared to males.

"The aggressive elimination of the bacteria, together with a lack of production of the chemicals and cells that make you feel lousy whilst fighting infections, results in milder symptoms in [females](#) and faster recovery. And this could explain why, in humans, men also seem to suffer more severe symptoms when they encounter infections.

"What's also important is that our study shows that biological sex-differences outside of the [reproductive system](#) are far bigger than we thought. Sex matters. Women are not merely smaller versions of men. And this has to be taken into consideration in both investigation into and treatment of inflammatory diseases."

More information: Scotland RS et al. Sex-differences in resident immune cell phenotype underlies more efficient acute inflammatory responses in female mice. *Blood* 2011 (epub ahead of print).

Provided by Wellcome Trust

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