

Male and female mice respond differently to inflammation

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New research published in the *Journal of Leukocyte Biology* shows that male and female mice respond differently to inflammation at the cellular level. Specifically, in male mice the spleen acts as a source of white blood cells, while in females this is not the case. This discovery suggests that human studies are necessary to determine if current medical practices, which treat men and women generally the same, should be altered to reflect sex-specific differences.

"The principal implication of this study is that it highlights the importance of sex differences in complex biological processes such as inflammation," said James Whiteford, Ph.D., a researcher involved in the work from the Centre for Microvascular Research at the William Harvey Research Institute, Barts and the London School of Medicine and Dentistry at Queen Mary University of London, in London, England. "This is particularly relevant as to how we design and interpret our experiments and how we evaluate the potential efficacy of anti-inflammatory therapeutics."

To make this discovery, Whiteford and colleagues used male and [female mice](#) and exposed them to zymozan in a peritonitis reaction and compared the numbers of different types of [white blood cells](#) to the [peritoneal cavity](#) and the blood. They found that higher levels of neutrophils and monocytes were recruited to the blood and peritoneal cavity in males than in females. They also compared the production and expression of a diverse spectrum of chemokines and cytokines and their receptors and found that males and females were similar.

"Sex differences in immune-related diseases have long been known. Autoimmunity, for example, is much more common in women, a bias often linked to immune cell types called B and T cells," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "These new findings highlighted important potential [sex differences](#) in how more primitive or 'innate' immune cells including neutrophil and monocytes operate. These new data will influence how we design and interpret clinical trials and also may provide new therapeutic opportunities for diseases that differentially affect men and women."

More information: E. Kay et al. Sexual dimorphisms in leukocyte trafficking in a mouse peritonitis model, *Journal of Leukocyte Biology* (2015). [DOI: 10.1189/jlb.3A1214-601RR](https://doi.org/10.1189/jlb.3A1214-601RR)

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