Men and women could use different cells to process pain

June 30 2015, by Edmund Keogh

If only I could shut off my my microglia right now. Credit: Todd/Flickr

We have known for some time that there are sex differences when it

comes to experiencing pain, with women showing a higher sensitivity to painful events compared to men. While we don't really understand why this is, it seems likely that both biological and psycho-social factors are involved. However, a new study published in *Nature Neuroscience* suggests that there may be a sex difference in the immune cells involved in the processing of pain signals. The results show that it is time to stop ignoring sex differences in research.

The researchers looked at the immune responses of male and female mice, and found that different immune cells seemed to signal pain. They found that for male mice, microglia, which serve to defend the brain and spinal cord, were important in signalling pain. However, this did not seem to be the case for female mice. Instead white blood cells known as T cells seemed to signal pain.

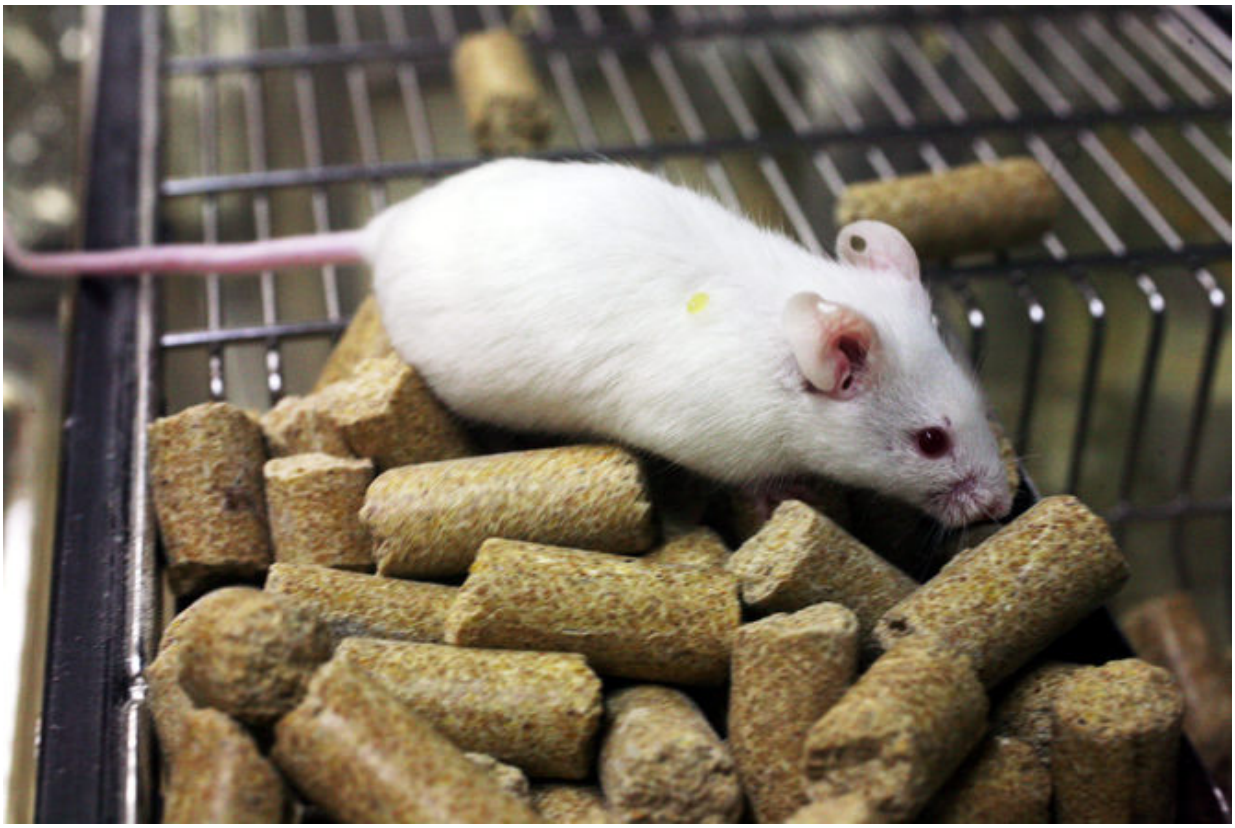
While we need to be cautious about translating these results to humans, the authors conclude by asking whether we should start thinking about different ways of managing chronic pain in men and women. For example, could drugs be developed that target these different pain pathways, and used in a sex-specific way.

Stop ignoring sex in research

The study adds to a growing body of evidence showing that sex differences are relevant for health. We know that there are important differences in how males and females respond across a range of health conditions. In an era of personalised pain medicine, this raises general questions as to what works best, and for whom.

There is a lot at stake. If a pain response is found in males, it does not automatically mean it will be found in females, and vice versa. Similarly, if a treatment is found to be less effective in one sex, it does not mean it is ineffective for all. Looking at it in this context, have some approaches

that might have worked for females, been dismissed too early if just tested on males?



Researchers are underestimating the need to look at sex differences in animal research. Credit: Rama/wikimedia commons, CC BY-SA

Part of the problem is how we do clinical-health research. Historically, women were systematically excluded from clinical trials. Although researchers are getting better at recruiting both men and women, progress is slow. Sometimes these differences are actually viewed as "nuisance variables" to be statistically controlled for.

Unless you go looking for sex differences, how will you know whether

they exist and are important? We need to encourage a change in research practice, which means designing studies to allow this to happen. In the US, the main health funding agency, the NIH, now requires researchers to consider the potential effect of sex/gender within their studies. Some medical journals, such as The Lancet and The *Journal of the American College of Cardiology*, include instructions to authors to consider, and report, sex differences. Interestingly, it is not yet standard practice to see sex differences considered in systematic reviews of treatment efficacy studies for pain.

Since there may be differences in male and female health, we can no longer generalise or ignore sex. Unless there is a good reason not to, then males and females should be recruited into research, and sex differences considered.

The study is an important wake-up call as we are still some way to go before we see such comparisons become a mainstream part of clinical-health research investigation and reporting practice.

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