Importance of sex-specific testing shown in anxiety study

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An Australian study has flagged an important truth for the medical research community. Like their human counterparts, male and female mice are not only different, their respective genetic responses can often be the reverse of what you'd expect from pharmacological results. This has important ramifications for laboratory and clinical testing.

Dr Tim Karl, behavioural neuroscientist at the Garvan Institute of Medical Research, found the opposite of what he expected in female mice when he investigated the anxiety behaviours of males and females in specific mouse models.

His results were reported recently in the *European Journal of Neuroscience*.

"There's a neurotransmitter in the brain known as NPY, and we know that it buffers behavioural consequences of stress, lowering anxiety levels," explained Karl. "Pharmacological tests show that when you introduce NPY to an animal in a stressful situation, its stress levels decrease."

"Studies in the past have shown that male mice created without NPY are more anxious than normal mice, which is hardly surprising. What is surprising is that female mice without NPY, while still more anxious than normal mice, are less anxious than the males without NPY."

"Knowing that normal female mice respond in a different way to stress

than normal male mice, in the same way that women respond differently to stress than men - they are at least twice as prone to anxiety disorders for example - we didn't expect what we found."

"The outcomes tell us that you have to do both genetic studies and pharmacological studies to get the whole picture and see what your gene of interest is really doing."

"You also have to look at males and females because we operate differently. Women show a better response to certain antipsychotics than men, for example."

"Using female mice in research is complicated by the females' oestrus cycle - it impacts on neuro-physiological parameters, including behaviour and perception of stress. For these reasons, and because of the additional time and cost involved in taking such variations into account, people often avoid using females in their research."

"But when a sexual difference has bearing on the physiological response under investigation, it becomes vital to look at males and females, both in animals and in humans."

Source: Research Australia

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