

# World of IDEAS



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SOCIAL SCIENCES RESEARCH AT THE  
UNIVERSITY OF OTTAWA



## Man flu, more than a myth

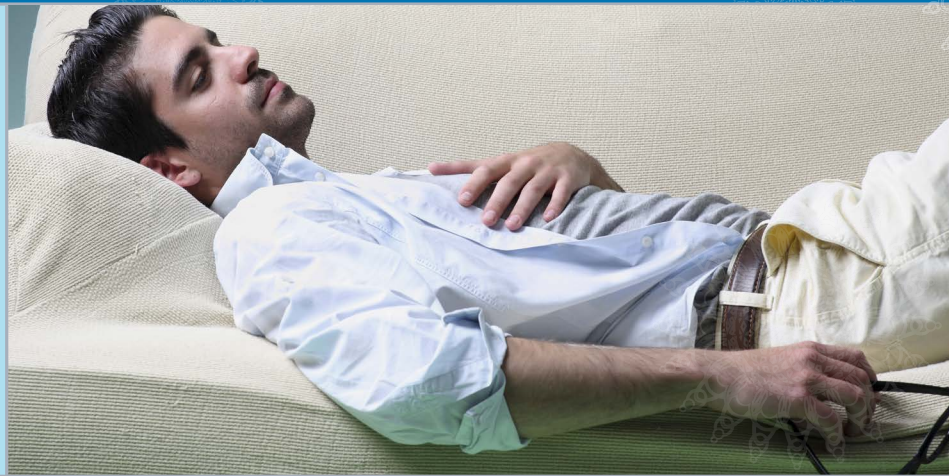
Nafissa Ismail (University of Ottawa)

*Winter is on its way, and with it comes everyone's favourite part of the season: scratchy throats and stuffy noses. But why do men seem to suffer more from colds, flus and other winter blues? uOttawa Professor Nafissa Ismail suggests that there's more to man flu than theatrical whining.*

### Why men seem to suffer more than women?

Professor Ismail's study exposed several groups of mice to a bacterial endotoxin called LPS (lipopolysaccharide) in order to test the responses of their immune systems to a challenge. The groups included both male and female mice of adult and pubescent ages, and

*The Female estrogens act as a boost to the immune system – meaning that females have stronger immune responses and are better equipped to deal with sickness.*



measured their symptoms of sickness to determine which group was best at fighting off a bug. The results showed that the pubertal mice of both groups displayed fewer symptoms and for a shorter time, while the longest and most severe symptoms were observed in the adult male mice.

age difference, the immune system of both males and females of pubertal age is still not fully mature and could explain why they recovered faster than the adults. So it seems that there is indeed a scientific explanation as to why a guy's cold always seems much worse!

### **Testosterone - an immune suppressor**

So what exactly is going on here? Why were the female mice better at battling illness, while the males got hit the hardest? The answer lies in sex hormones. Testosterone, a male sex hormone, has been identified as an immune suppressor, while female estrogens act as a boost to the immune system – meaning that females have stronger immune responses and are better equipped to deal with sickness, while males get dealt a knockout punch. As for the

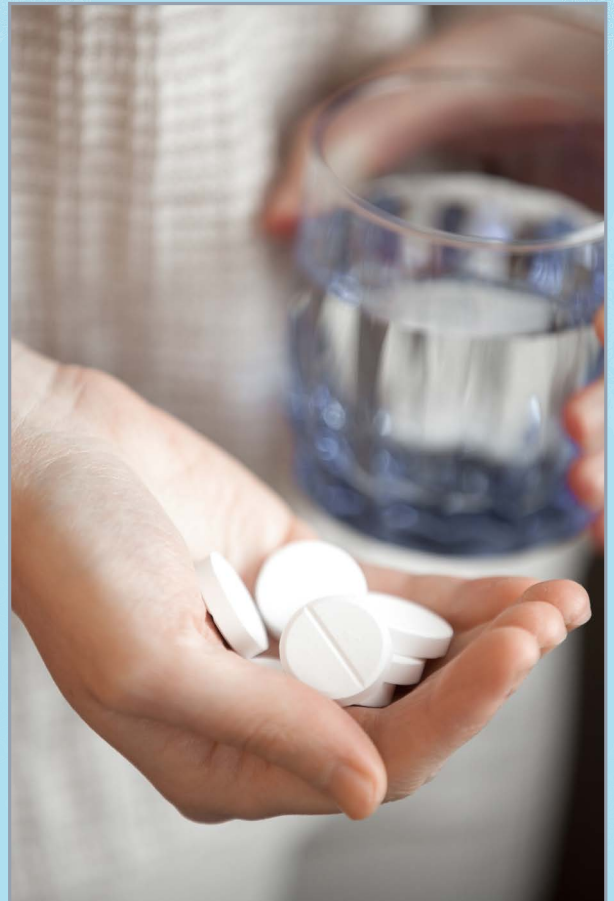
### **Findings**

As well as unpacking some truth on 'man flu', Professor Ismail's research also showed some interesting – and sobering – developments in the pubertal mice following their immune challenges. Factors like illness create stress, and Ismail found that pubertal female mice exposed to stress like sickness demonstrated lasting effects once they reached adulthood, including reduced sexual receptivity and higher levels of anxiety and depression. Adult rats



demonstrated no lasting brain changes after experiencing the same stressors, suggesting that since pubertal brains are still developing and changing drastically, the effects of stress can have serious outcomes later in life. With the tremendous stress placed on teenagers and young adults today, this research could bring important developments in preventative treatment, youth mental health and stress management, helping everyone to breathe a little easier.

With results this clear, we might have to go a little easier on the guys this flu season – they deserve a break!



**Nafissa Ismail** completed her Bachelor of Science in Psychology with a specialization in Neuroscience at Concordia University in 2002 and received her Ph.D. from Concordia University in 2009. She then completed her post-doctoral fellowship at the University of Massachusetts.

She is the Director of the NISE Laboratory (NeuroImmunology, Stress, and Endocrinology).

#### **Her Research Description**

Critical periods of development are marked by important physiological and neural changes. These changes shape behavior and set the stage for the vulnerability of diseases in adulthood. Exposure to stressors during these critical periods can have profound long-lasting effects on brain function and can increase the risk of psychopathology later in life. While it is possible to reduce exposure to certain environmental stressors, other stressors, such as sickness, are almost unavoidable. My research interests are to investigate the neurochemical mechanisms

through which immune challenge and hormones during the prenatal and pubertal periods alter behavior. The behavioral outcomes that I am examining are social behaviors, depression and cognition. I use small rodents, such as laboratory mice and rats, to gain mechanistic insight into these questions.

[View Professor Ismail's profile](#)