

Professor investigates role of stress in surgery recovery

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Can keeping calm before surgery decrease your post-operative pain and shorten your recovery time? That's the focus of current research by U of T Mississauga assistant professor of psychology Loren Martin.

Martin studies the complex relationships between pain and stress, and the resulting social and empathetic behaviours in both people and mice. He earned his PhD in neuroscience at U of T, where he focused on learning and [synaptic plasticity](#). He became interested in pain research as a postdoctoral fellow at McGill University's Pain Genetics Lab. Previous research delved into the effects bonding can have on pain experience, where Martin found that both people and mice feel greater empathy for someone they've bonded with rather than someone who is a complete

stranger.

"A lot of the mechanisms of pain and learning are similar, operating the principles of synaptic plasticity, communication and excitability," he says. "I'm interested in conditioned pain responses, which can be related to learning and memory."

Since joining UTM, Martin has established his own pain lab where part of his current research focuses on post-operative pain experiences.

"Right now, we're looking at whether pre-operative anxiety changes the course of post-operative pain," he says. Martin's team is studying the [recovery time](#) and [pain level](#) of mice who are stressed before an operation. In days leading up to a minor surgery, mice are put through short stress tests that include either swimming or being temporarily confined for a short period.

Martin hopes the research will show if pre-operative stress experiences change how the mice react to painkillers. "The pre-operative stress could be enough to change the expression of opiate receptors, which is what morphine binds to in the spinal cord and brain," he says. "If stress changes opiate receptors, animals and people should have a different requirement for analgesics like morphine."

The findings could translate into new and personalized pain therapy for human patients, Martin says. "If a person or mouse is stressed, the brain's ability to filter pain signals is negatively affected and [pain](#) can be amplified," he says. "Is preoperative stress a good predictor of how much morphine a patient wants after surgery? Would an unstressed group need less morphine than the stressed group? That's what we're hoping to discover."

Provided by University of Toronto

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