

Learning from locusts: Study points toward new treatment for stroke and migraine

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Queen's University biologists are learning from locusts how the human brain may be manipulated to alleviate diseases such as migraines, stroke and epilepsy Credit: Courtesy of Gary Armstrong

A similarity in brain disturbance between insects and people suffering from migraines, stroke and epilepsy points the way toward new drug therapies to address these conditions.

Queen's University biologists studying the locust have found that these human disorders are linked by a brain disturbance during which <u>nerve</u> <u>cells</u> shut down. This also occurs in locusts when they go into a coma



after exposure to extreme conditions such as high temperatures or lack of oxygen.

The Queen's study shows that the ability of the insects to resist entering the coma, and the speed of their recovery, can be manipulated using drugs that target one of the cellular signaling pathways in the brain.

"This suggests that similar treatments in humans might be able to modify the thresholds or severity of migraine and stroke," says Gary Armstrong, who is completing his PhD research in Biology professor Mel Robertson's laboratory. "What particularly excites me is that in one of our locust models, inhibition of the targeted pathway completely suppresses the brain disturbance in 70 per cent of animals," adds Dr. Robertson.

The Queen's research team previously demonstrated that locusts go into a coma as a way of shutting down and conserving energy when conditions are dangerous. The cellular responses in the locust are similar to the response of <u>brain cells</u> at the onset of a migraine.

Noting that it's hard to drown an insect - due to their ability to remain safely in a coma under water for several hours - Mr. Armstrong says, "It's intriguing that human neural problems may share their mechanistic roots with the process insects use to survive flash floods."

The Queen's study is published in the current edition of the *Journal of Neuroscience*.

Source: Queen's University (<u>news</u> : <u>web</u>)

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