

An elephantine discovery made about the nature of nerves

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A mouse trips while running and in milliseconds, rights itself.

An elephant trips, and ... who knows? According to preliminary research done by Simon Fraser University neurophysiologist and biomechanist Max Donelan, it may fall, unable to right itself.

Why? Because it turns out that nerve impulses travel the same speed in mice as in elephants.

The trouble that creates for elephants, says Donelan, is that they are 50 times the size of a mouse. Which means it takes an elephant 50 times longer even to realize it's tripped than it does a

mouse.

So if Donelan had any words of advice for running elephants, they would likely be: "Slow down."

Donelan made his discovery earlier this week with colleagues at the University of Alberta while working with Lucy, a 30-year-old, 5,400-kilogram Asian elephant at the Edmonton Valley Zoo.

Donelan wanted to test a theory he had that the speed at which nerve impulses travel is commensurate with the size of the animal in which they're traveling. In other words, the bigger the animal, the faster they go.

Right? Wrong, it turns out.

Donelan used an acupuncture needle to prick a spot behind one

of Lucy's knees and measured how long it took for her leg to twitch. And to his great surprise, it took a comparatively long time.

So what are the practical consequences of this? Donelan speculates there is something in an elephant's makeup that causes it to run more slowly than it otherwise might. Because if it tripped, the consequences would be dire.

"You can imagine that if you're huge like an elephant, and you trip on something, falling down is a big deal, so you don't want to do that," Donelan said in a phone interview from Edmonton.

His discovery could be a help to elephants living in zoos, in that it gives zoo veterinarians another

diagnostic tool to work with when an elephant is sick.

If the animal displays any neurological problems, such as twitching or lethargy, the vet now will know more about the elephant's nervous system when he or she examines it.

Understanding how nerve impulses travel in humans has been a boon to physicians understanding such human neurological disorders as multiple sclerosis and repetitive stress injury.

"That probably won't matter much to Lucy," Donelan speculates, half seriously and half not. "But she does like to paint. So maybe if she painted too much, it might be an issue."



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The Elephant Project group pose with an elephant at the Edmonton City Zoo. Dr. Max Donelan is third from the right.