For Dr. Artur Luczak, being a neuroscientist means charting new territory. “It’s like being one of the pioneers discovering western North America and going where nobody has ever gone before…we still don’t know so many things.” Dr. Luczak embodies this sense of pioneering with his research on neuronal activity.

Dr. Luczak’s lab uses multi-site silicon microelectrodes to simultaneously record activity in the cortex and subcortical structures to help understand information processing and memory formation in the brain. They investigate how neurological disorders like epilepsy distort the relationship between neuronal populations. He has also showed how neuronal activity in the cortex is composed of stereotypical sequential patterns, which he calls “neuronal packets”.

Dr. Luczak heads the Neuronal Data Analytics Lab and is an Associate Professor at the University of Lethbridge. At the moment, however, he is currently a Visiting Associate Professor while on a one-year sabbatical at Stanford University. He is also one of five instructors for the Introductory Workshop on Computational Methods in Neuroscience, held last June at the University of Lethbridge. The annual workshop is made possible through a partnership between Campus Alberta Neuroscience and the University of Lethbridge’s NSERC CREATE Biological Information Processing Program. He was also involved with planning CAN’s fourth annual symposium in 2015. “It was a great success to bring scientists from all universities across the province to better know each other. I think Campus Alberta Neuroscience is doing a great job to make Alberta neuroscience more than just the sum of its parts.”

An early interest in science set Dr. Luczak on the path he is on today. “Since kindergarten I was interested in why trees grow, how our bodies work… and now I consider myself very lucky to get paid for spending entire days thinking about how our brains function.” His efforts have not gone unnoticed. Dr. Luczak was recently elected to the Royal Society of Canada’s College of New Scholars, which is the first national system of multidisciplinary recognition for emergent intellectual leadership. Membership is made up of Canadians and permanent residents who have demonstrated a high level of achievement at an early stage in their career.

Considering this wealth of experience, what advice does Dr. Luczak offer to aspiring researchers? Keep trying. “One thing I’ve learned from doing science is that it’s hard. Most ideas are wrong and many experiments go nowhere.” But the key, he says, is to be persistent and not become discouraged by failure. “Only people who don’t try avoid failure. In science we are trying to find answers to questions nobody has answers to. Most of our approaches fail but it’s very satisfying when we get things right.”

Dr. Luczak says that Alberta’s neuroscience research field seems to be one of the strongest in Canada, but neuroscience in general has a lot of growing to do. “We gather a lot of different observations in neuroscience, but we still don’t have a unified theory of how the brain works.” But he is hopeful. “Before, people understood movement of planets it was necessary first to collect hundreds of thousands of observations. Those observations led to the idea that the orbits of planets around the sun are elliptic, which became crucial for coming up with the laws of planetary motion. Similarly in neuroscience, we are now collecting a lot of information on how the brain works but we still don’t have a general rule explaining how those pieces work together. I hope to see us achieve that in my lifetime.”