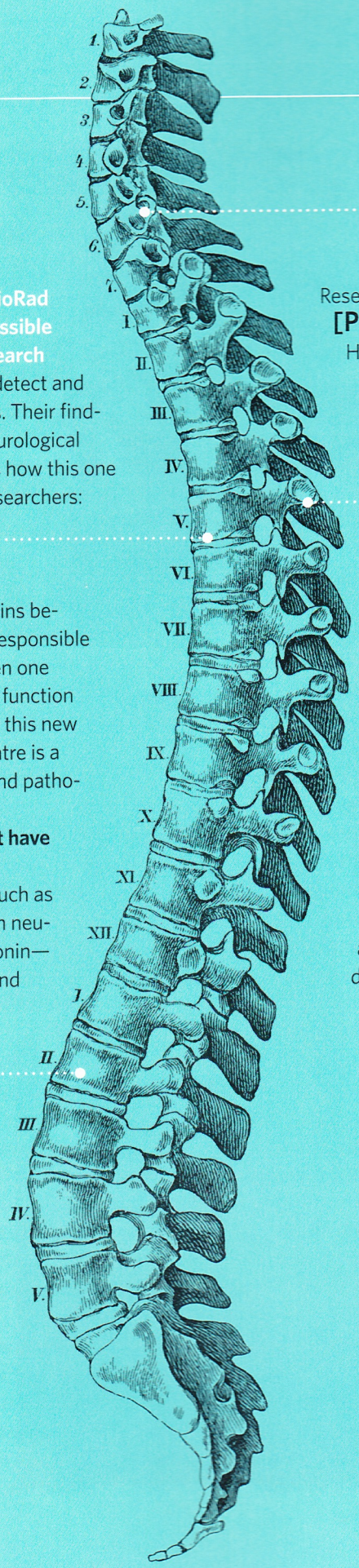
New technology, new leads

It looks as mundane as an office printer but promises to decode the extraordinary neural networks of the brain and spinal cord. The **BioRad ChemiDoc MP Imaging System—made possible by the Dr. Alfred E. Deacon Medical Research Foundation**—allows UM researchers to detect and measure proteins within these networks. Their findings could change the way we treat neurological diseases and spinal cord injury. Here's how this one machine is being used by multiple researchers:



James Nagy examines the proteins between the neurons (or nerve cells) responsible for passing electrical signals between one another, which are key to our motor function and how our bodies operate. Having this new tool in the Spinal Cord Research Centre is a gamechanger, says the physiology and pathophysiology professor.

"We can do in one day what might have taken a week before," Nagy says.

Since medications for conditions such as schizophrenia work by targeting certain neurotransmitters—like dopamine or serotonin—his research could identify new targets and lead to more efficient drugs.

Phillip Gardiner, professor emeritus in the Faculty of Kinesiology and Recreation Management, will use the new system to explore how neurons change in response to not only spinal cord injury but also diabetes, exercise and aging.

Researcher **Kristine Cowley [PhD/98]**, in the Rady Faculty of Health Sciences, will investigate ways to reduce the muscle atrophy and bone deterioration caused by spinal cord injury.

Colleague **Katinka Stecina [MSc/00, PhD/06]** seeks a better understanding of how spinal neurons generate walking in rats and mice. She'll use the new device to quantify the developmental changes in serotonin receptors localized on spinal neurons that are critical for walking. Without it, a precise measurement wouldn't be possible.

Will we ever be able to completely reverse spinal cord injuries? "I'm an optimist," Stecina says. "Even in the last 20, 30 years we have made a lot of changes that point in that direction."

"I'm grateful for the philanthropic support.... Canada's strength is its diversity for engaging and supporting a variety of research."

Katinka Stecina
Former NCAA Division I basketball player in the U.S., who came to the Spinal Cord Research Centre as a UM grad student interested in athlete injuries