



Dr. Yves De Koninck Tackling chronic pain

Impressed by the exciting growth prospects in the medical research field, Dr. Yves De Koninck left his professorship at McGill University and moved to Quebec City, becoming a world leader in the fight against chronic pain.

- » Studied biology at Laval University and neurophysiology at McGill University; completed post-doctoral studies at Stanford University and the University of Texas in Dallas
- » Director, cellular neurobiology unit, Laval University/Robert Giffard Research Centre (CRULRG) since 2000
- » National researcher, Quebec Health Research Fund (FRSQ)
- » Founder, Quebec Pain Research Network, comprising approximately 50 researchers around the province
- » The prestigious academic journal *Nature* published a special issue devoted to Dr. De Koninck's chronic pain research.

In 2000, Dr. De Koninck was appointed head of the cellular neurobiology unit of the Laval University/Robert Giffard Research Centre (CRULRG). "Here at Robert Giffard, there's been a real flurry of activity since 2000. That's what impressed me. Plus there was major growth potential. I've been able to do lots of recruiting: we now have 11 professors in the neurobiology unit, in addition to 50 to 60 researchers," he says.

"By convincing foreign researchers to come on board, we've developed unique expertise. It's a source of great pride for us," adds Dr. De Koninck. "We've also recruited a number of Quebecers who had received international offers. Thanks to the environment we've created, we're very competitive when it comes to attracting the finest research talent."

More than a symptom

Much like scientists in the Middle Ages who believed the world was flat, the medical community long maintained that pain was a symptom of an underlying problem. But as researchers at Robert Giffard have proved, chronic pain is a disease in its own right.

"According to the clinical definition, chronic pain is pain that lasts for more than six months. It is very resistant to current treatments and is highly debilitating. Hypersensitivity is one of the classic symptoms, with simple contact with the skin triggering a painful reaction," says Dr. De Koninck.

"When discussing chronic pain," he adds, "the figures that come up are enormous. Between 20% and 30% of the population will develop chronic pain at some point during their lives. And the frequency increases with age: among the elderly, it can reach 50%. It's a major socio-economic problem that will only get worse as the population ages. We need to start tackling the problem more vigorously."

New painkillers

At Robert Giffard, Dr. De Koninck's research teams have identified the cause of chronic pain as an ion pump dysfunction in the nervous system that disturbs the transmission of pain signals.

"It's different than any of the mechanisms previously described. It opens up a whole new realm of pharmaceutical possibilities. The main drugs used to treat chronic pain are the opiates – morphine derivatives that have been widely used for thousands of years. But their efficacy is questionable and they cause a range of unpleasant side effects. Based on what we've discovered, we think we can develop a new class of painkillers to address this problem."

Dr. De Koninck wasted no time in getting the ball rolling: together with researchers Martin Gagnon and Jeffrey Coull, he recently founded Chlorion Pharma, which aims to develop new drugs based on the mechanisms identified at Robert Giffard. The company hopes to bring its first drugs to market in 5 to 10 years.

Working in partnership

In addition to his pain research, Dr. De Koninck has launched a unique neurophotronics partnership program between Robert Giffard, McGill University's research facility and Laval University's renowned Centre for Optics, Photonics and Lasers (COPL). The goal is to encourage physical science specialists to develop new technologies for biological applications.

Dr. De Koninck explains: "One key objective is to probe living tissue without damaging it. We thus hope to use light to look inside cells without having to open them up. In very small-scale environments, laser technologies play an important role and can be used alongside magnetic resonance technology." So far, this promising program has received more than \$25 million in grants from provincial, federal and international organizations.

"We've recruited young researchers and developed highly specialized labs. In the niche area of pain research, Quebec City is playing a unique and valuable role. And by exploring similar research opportunities, Quebec City stands to gain even more international recognition."

