



Dr. Auger and Germain: extending the boundaries of tissue engineering

As the co-directors of Quebec City's world-famous Experimental Organogenesis Laboratory (LOEX), the only one of its kind in Canada, Dr. François A. Auger and Dr. Lucie Germain are masters of the art – and science – of reconstructing human tissues and organs using cell cultures.

Dr. François A. Auger

- » Professor of surgery, Laval University
- » Director, CHA research centre
- » Founding director, LOEX (1985-present)
- » Knight of the National Order of Quebec (2003)

Dr. Lucie Germain

- » Scientific coordinator, LOEX
- » Professor, Department of Surgery and Ophthalmology, Laval University
- » Canada Research Chair in Stem Cells and Tissue Engineering

Founded by Dr. François Auger in Quebec City in 1985, LOEX was one of the first research labs in the country to specialize in tissue reconstruction using cell culture technology. It was there in 1986 that autologous epidermal cells were cultured for the first skin transplant involving a major burn victim in Canada.

Since then, the lab's long list of groundbreaking developments has made headlines around the world, including the first blood vessels cultured in vitro (1998); the first living heart valve leaflets using human tissue cultures (2004); and the first neurons generated from skin cells (2007), to cite a few of the more noteworthy examples.

LOEX's multi-disciplinary research team includes a skin culture division and other units dedicated to each of seven primary research fields: skin; blood vessels; bones and ligaments; bronchial tubes; corneas; fatty tissue; and urological tissue. "Instead of injecting masses of cells, we stay close to nature," says Dr. Auger, who, in addition to co-directing LOEX, runs the research unit of the Quebec City Affiliated University Hospital Centre (CHA).

Quebec City: embracing the future

Dr. Auger and Dr. Germain are delighted that they selected Quebec City for their work and research development activities. "It's a wonderful place. It doesn't have the traffic problems and high-stress lifestyle of larger urban centres. It's a little like being at Yale or Princeton, which are renowned for their state-of-the-art facilities, even though they're not in the biggest or most important US cities."

Working closely with Dr. Auger is LOEX's scientific coordinator, Dr. Lucie Germain, a professor in Laval University's Surgery and Ophthalmology Department and holder of a Canada Research Chair in Stem Cells and Tissue Engineering. According to Dr. Germain, with the advent of the Internet and new technologies, it is now easy to collaborate with researchers from around the world. "Knowledge and originality will be the keys to maintaining our competitiveness in the future," she notes.

Creating synergies

Dr. Auger insists that LOEX would have never been possible without the support of the Quebec Firefighters Burn Victim Foundation (FPQGB). "Our initial goal was to produce skin cultures. And because the Foundation paid for the lab and all of our equipment, we were able to focus on tissue engineering," he explains.

As a Quebec City native, Dr. Auger was committed to developing his expertise in his hometown. "Our success," he notes, "is due to the synergies that we have created. The researchers operate as a team and systematically undertake joint projects, even though they also enjoy a large degree of independence."

LOEX researchers also make a point of discussing their work with young people. As a result, in 2007 they were presented with the Canadian Institutes of Health Research Synapse Award, which recognizes outstanding efforts to promote health research among high school students nationwide.

Major projects

In late 2009, LOEX will be moving from its current location in Saint Sacrement Hospital into a new high-tech facility on the Rue de Vitré in Quebec City. Funding in the form of a \$25 million grant is being provided by the Canada Foundation for Innovation, the Quebec Department of Health and Social Services (MSSS) and various other sources. "With so many multi-disciplinary tissue engineering researchers working together under the same roof, our new lab will rank among the top four worldwide," notes Dr. Auger proudly.

Dr. Auger and Dr. Germain's future projects are sure to keep the world's attention focused on Quebec City. Next year, LOEX researchers are slated to begin implanting in vitro heart valves into bioreactors prior to conducting pre-clinical trials. In addition, the first transplants involving lab-grown corneas and in vitro bladders are expected to be performed by 2012.

