



# Tiny tools

Antibodies and other tools developed by New Brunswick biotech company are used by environmental researchers around the world

**Sackville-based** biotechnology company Environmental Proteomics is celebrating a decade of creating innovative tools for university, industry, and government researchers worldwide.

The “tools” are purified antibodies and calibration standards, used to detect, describe, and measure certain processes happening within plant and animal cells. The antibodies have proven valuable to a broad range of environmental researchers, whether they’re studying photosynthesis in tree lichens, heavy metal detoxification, or microbial reactions in oil wells.

The company is also involved in projects studying the effects of environmental conditions on fish stress levels (particularly useful in aquaculture studies), and of pollutants on amphibians, among others.

In April, Environmental Proteomics and a research team from Mount Allison University won funding from the Canada Foundation of Innovation to study how the phytoplankton-mediated exchange of carbon in and out of the ocean relates to climate change.

But before the company came the idea — a breakthrough by Dr. Doug Campbell, currently a Canada Research Chair at Mount Allison.

“People have used antibodies in research for a long time,” says Dr. Chris Brown, Environmental Proteomics CEO and research scientist. “If you’re working on humans and you make an antibody, first of all, there is a huge market for it ... and humans are basically all biochemically the same. One antibody is going to work in every single sample.

“That’s not how things look in the environment ... There’s a huge amount of diversity. You might make a tool to measure something in corn, but it may not work in barley, and it’s certainly not going to work in oceanographic samples.”

Campbell needed four or five specific antibodies for his work on photosynthesis, but creating them was cost-prohibitive. He needed both research tools and a business case for developing them.

In search of a solution, he delved into the vast amount of genetic data becoming available.

“Databases were just filling up with information about the sequences for proteins, from every organism that people could get their hands on,” Brown describes.

By aligning proteins from diverse organisms, Campbell found a short sequence in a particular protein that was the same in every species. An antibody targeting that sequence could be used across organisms.

Swedish company Agrisera AB quickly agreed to make a suite of Campbell’s “global” antibodies. “They saw the light,” says Brown. “They could make an antibody that’s going to work for all of their plant customers and all of their algal researchers and bacterial researchers.”

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Dr. Chris Brown, CEO  
Environmental Proteomics

phytoplankton research.”

He describes the company today as a “designer of quantitative tools. Until now, that has meant a lot of antibody design, but we are adapting our designs for emerging technologies.” Consulting, showing others how to use the products they’ve developed and how to quantify their results, is also a crucial part of the company’s operations.

To that end, Brown is focused on expanding the company’s reach by “finding other Canadian researchers who are doing interesting stuff ... something we can collaborate on. They’re not always going to be in Canada, but that’s my current approach.”

Photo top of page: Environmental Proteomics has identified a protein sequence that is the same in every species, allowing them to create a multi-purpose antibody. It’s useful for studying a diverse range of organisms, including bacteria in fresh water lakes.

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