OVC Scientist Spotlight:  Byram Bridle, Pathobiology

Developing vaccines to fight cancer

Immunotherapy — using the body’s own immune system to attack cancer cells — is one of the most promising new areas of cancer research, and OVC researchers are on the leading edge.

Professor Byram Bridle’s work bridges the fields of virology and immunology and is aimed at fighting cancer by hyper-activating the immune response of patients without the toxic side effects of standard treatments.

A U of G graduate, Bridle joined the Department of Pathobiology in 2012 after a post-doc at McMaster University. At OVC, he leads a team of researchers investigating ways to combine the cancer-fighting abilities of the immune system with oncolytic viruses that replicate in and kill only cancer cells.

His strategy involves first vaccinating the patient with proteins taken from cancer cells to trigger an anti-tumour immune response, much like a flu shot stimulates immunity to a particular strain of the flu. Then an oncolytic virus modified with the same protein is injected to hunt down cancer cells, infecting and killing them directly and causing them to express the target protein, which generates an even greater immune response.

“We can both kill tumour cells with high specificity and leave the normal cells alone,” says Bridle. “With this approach, doctors would not have to pinpoint the precise location of the tumour target and could treat patients without the toxic side effects of other forms of therapy.”

So far, Bridle has been successful in treating cancer in laboratory mice. The next step is to try this method on cats and dogs that have cancer, and eventually, humans.

“Cats and dogs have a similar level of genetic diversity across breeds and share our environments, including living in our homes, drinking our water and sometimes even eating our food,” he says. “Testing promising new cancer treatments in companion animals can be a win-win situation.”

Bridle’s research is supported by the OVC Pet Trust Fund and the Canadian Breast Cancer Foundation. Collaborators include Profs. Dorothee Bienzle and Paul Woods at OVC as well as Prof. Brian Lichty at McMaster University.