

BioCanRx

BioCanRx is a national initiative that will accelerate the development of the most promising biotherapeutics for cancer from discovery through to clinical trials, including cancer-killing viruses, immune cell therapies and synthetic antibodies.

Dr. Bell is a Senior Scientist at the Ottawa Hospital Research Institute (OHRI), a professor of Medicine at the University of Ottawa and Program Director of OICR's Ontario Regional Biotherapeutics Program (ORBiT). The collaborative initiative will I Hospital.



Dr. John Bell and his collaborators are developing an innovative oncolytic vaccine strategy using an oncolytic virus derived from the Maraba virus.

A true pioneer in his field, Dr John Bell has led a number of important initiatives aimed at developing oncolytic virus-based cancer therapies and evaluating their clinical potential. He has created a Canadian oncolytic virus consortium of laboratory and clinical researchers from across Canada to explore the potential of virus-based cancer therapies. In addition, Dr Bell directs the biological therapeutics alliance of the Ontario Institute for Cancer Research.

In 2011, Dr Bell's group published a landmark study in the prestigious scientific journal *Nature* showing, for the first time, that oncolytic vaccinia viruses delivered intravenously can consistently infect and spread within tumours without harming normal tissue in patients.

Dr Bell is a senior scientist, cancer therapeutics at the Ottawa Hospital Research Institute and a professor in the departments of medicine and biochemistry, microbiology and immunology at the University of Ottawa.

The Clinical Trial for Pancreatic Cancer

Oncolytic viruses are self-replicating biological machines that exploit fundamental defects in tumour cells allowing them to specifically destroy cancer without damaging normal tissues. These viruses can act in multiple ways by killing cancer cells directly; destroying tumour blood vessels; and by activating the patient's own immune system to attack cancer cells throughout the body.

Oncolytic virus therapy has already shown great promise in early clinical trials on patients with metastatic disease, who have failed all other treatment options, resulting in long-term remissions and, in some cases, potential cure. Based on the treatment of 300 patients, side effects, consisting primarily of fever and nausea, appear to be both transient and mild. In fact, Vaccinia has **been** administered to millions of people as a live virus vaccine to eradicate small pox with few adverse effects. The virus can be administered intravenously and once it has "done its job" of eradicating the tumour, it is cleared from the system and can no longer be detected. Although dramatic clinical responses have been seen, not all patients respond as well, if at all, to oncolytic virus therapy.

One of the goals of the BioCanRx network is to explore the potential of combination therapies to overcome resistance in non-responders and to test with different cancers. This is one truly unique aspect of the proposed research and Pancreatic Cancer Canada has funded a pancreatic cancer clinical trial.