



# THIS IS BIOTECH

## BEYOND MOOSE AND MOUNTAINS: BUILDING CANADA'S BIO-BASED ECONOMY.



### Reolysin: The Little Virus that Could

#### Oncolytics Biotech Inc., Calgary, Alberta

What sounds like science fiction - injecting people with a common and harmless human virus that turns into a lethal cell-killing machine within three days - is actually novel science. Especially since the cells this human virus kills are cancerous.

The scientists at Calgary-based Oncolytics Biotech Inc. are in the final stages of testing Reolysin, as a therapy for a broad range of cancers including head and neck, lung and liver. With remarkable efficiency and few side effects, the therapy is promising to revolutionize the way cancers are treated.

How it works is based on our own body's ability to fight - or not fight - common viruses. A common, harmless virus is the reovirus (Respiratory Enteric Orphan virus). Most people pick up the reovirus by age 12 and it usually causes little or no health problems. Unless, it happens enter directly into a cancerous cell that can't fight it off. Once that happens, the cancerous cell is dead within three days.

The concept of using a virus to kill cancer is not new, but to use a formulation of the common reovirus that shows success at killing such a broad base of cancers is what has the scientific and medical community buzzing.

Reolysin does what viruses do best - they keep replicating until their host (the cell) is overwhelmed. Then they move on to the next cell. In this case, the host is up to two-thirds of all cancers that share a common feature, called an "activated Ras pathway." If the cancer cell has this Ras pathway it is unable to fight off the Reolysin therapy and the cancerous cells die. Using Reolysin, along with other front line therapies like chemo and radiation, is having remarkably positive results in clinical testing.

"Reolysin works freakishly well in combination with the typical first line and second line chemotherapeutic products," says Dr. Brad Thompson, CEO of Oncolytics Biotech.



While there are many cancer-fighting therapies out there, just as there are many types of cancers, many of the therapies have brutal side effects. Some so debilitating that patients have to make significant quality of life choices. Reolysin has "amazingly few side effects," similar to pre-flu symptoms including a low-grade fever and tiredness, which passes within a day or so, confirms Dr. Thompson. Minimal side effects are exceptionally valued by patients and care givers alike with cancer therapy.

Currently in patient clinical trials in the UK, Reolysin is showing that the synergistic effect of adding Reolysin to the other first line therapies (chemo or radiation) is not simply a case of one plus one equals two, but "1 + 1 = 5 or 6", says Dr. Thompson.

As Oncolytics continues with the successful clinical trials in the UK and US, it hopes to soon gain approval and bring it to market.

And in a twist worthy of an Asimov novel, this reovirus, identified almost half a century ago, was so benign that for decades scientists used it purely to study how viruses infect human cells. But it wasn't until the mid to late 1990s that graduate students and professors working at the University of Calgary discovered that the reovirus appeared to have an ability to infect and kill many types of cancer cells, without affecting normal, healthy cells. Suddenly, the little virus that couldn't do much harm could be a lethal cancer fighter.

"Most good science is found by accident," says Dr. Thompson. But getting good science to the market takes years of scientific research, clinical studies and millions of dollars. Reolysin is well on its way to changing the way many cancers are treated. That's not science fiction.