Chris Richardson imagines a powerful new treatment for cancer that uses the measles virus to target and kill cancer cells. His discovery that many types of cancer cells are covered with measles receptors opens the door to just such a cure.

While most people see measles as an unpleasant childhood illness that has virtually disappeared thanks to vaccines, Dr. Chris Richardson sees the virus in a different light. Through many years of examining measles virus, he has identified three key receptor molecules that allow the virus to latch onto cells so it can infect them. But his most startling—and hopeful—discovery is that these measles receptors are more than a thousand times more plentiful on many types of cancer cells than they are on normal cells.

“Because of these receptors, it’s actually much easier for the measles virus to infect cancer cells than it is for it to infect normal cells,” notes Chris, an IWK-affiliated scientist and professor in the departments of Microbiology & Immunology and Pediatrics at Dalhousie Medical School. “This is good news, because we’ve found measles receptors in abundance on lung, breast, colon, bladder and prostate cancer cells.”

The measles receptors are the keys that allow the virus to enter the cancer cell. Once inside, the virus wreaks havoc on the cancer cell and its malignant neighbours. “The invading measles virus blows away the cancer cell membranes, creating one giant measles-infected cancer cell that then explodes,” Chris says. “This leads to the rapid infection and destruction of the cancer cells in the area, without harming the healthy cells. It’s incredible to watch through the microscope.”

Chris and his team are now working with the vaccine strain of the measles virus to see if they can develop it into a safe and effective treatment for cancer. He says that people’s immunity to the virus—from being either infected or vaccinated—would actually enhance the treatment. “Cancer cells are typically able to hide from the immune system,” he explains. “Infecting them with the measles virus is like putting little flags on them, so that the immune system can see them and go in for the attack.”

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An animal lover, Chris also imagines using a virus to save dogs from cancer. “We’ve found receptors for the canine distemper virus on canine cancer cells,” he explains. “We’re very excited about the possibility of engineering the distemper virus into a cancer treatment for dogs.”

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