

Childhood virus RSV shows promise against adult cancer

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RSV, a virus that causes respiratory infections in infants and young children, selectively kills cancer cells while leaving healthy cells alone, researchers from the School of Medicine at The University of Texas Health Science Center San Antonio said.

Santanu Bose, Ph.D., of the School of Medicine, is the inventor on a pending U.S. patent of RSV as an oncolytic therapy. This represents a new use for the virus. Bandana Chatterjee, Ph.D., of the School of Medicine and the South Texas Veterans Health Care System, is the co-inventor. Oncolytic viruses preferentially infect and damage [cancer cells](#).

Confirmed in mice

Dr. Bose, associate professor of microbiology and immunology, studied the immune response of normal and [cancerous cells](#) to RSV ([respiratory syncytial virus](#)). During these studies he discovered RSV's oncolytic properties. Dr. Bose next worked with Dr. Chatterjee, professor of molecular medicine, to test RSV in her mouse model of prostate cancer. Those results again showed a robust anti-cancer effect of RSV.

License agreement

In July, CZ BioMed Corp. of Tampa, Fla., licensed the oncolytic use of RSV in an agreement with South Texas Technology Management (STTM), a regional University of Texas technology-transfer office

managed by the Health Science Center. RSV is already showing effectiveness in human trials abroad, according to a company statement.

Dr. Bose, whose work is funded by the National Institutes of Health, said, "This is an exciting development because this is a homegrown invention that is being tested in humans, and therefore this [scientific discovery](#) has direct clinical, translational relevance."

"We are pleased that CZ BioMed has agreed to work with us to commercialize Dr. Bose's and Dr. Chatterjee's exciting discovery to efficiently target and treat different forms of cancer," said STTM Executive Director Arjun Sanga, J.D., assistant vice president for technology transfer at the UT Health Science Center.

Advantages to therapy

Dr. Chatterjee said it is important that the virus killed tumors even in mice with competent immune systems. This mirrors human patients who have functioning immune defenses. RSV also worked whether it was injected directly into the tumor or systemically through the abdomen. "This is important because there are some tumors to which you can inject the drug directly, whereas others you can't and a drug must work systemically," Dr. Chatterjee said.

Her work on the RSV project is funded by a Merit-Review grant from the U.S. Department of Veterans Affairs (VA), a VA Senior Research Career Scientist Award, and a grant to Drs. Bose and Chatterjee from the National Cancer Institute.

Normal cells shoot down RSV, cancer cells can't

RSV is expected to be safe because it is a children's virus—it does not

infect adults. It also only infects the lungs. Dr. Bose explained why RSV grows only in tumors, not healthy cells: "It is because of the immune response. Normal cells have weapons to shoot down viruses, but cancer cells have lost their anti-viral arsenal. For this reason viruses can establish themselves in a tumor, grow and induce cell death."

Results in humans

A press release from CZ BioMed notes: "Ultimately, the results from human trials overseas have been extremely successful and exciting to date, with minimal side effects as compared to traditional chemo or radiation therapies." The company's statement also indicates its plan to conduct a clinical trial with oncolytic RSV in the U.S.

In a series of papers between [2009](#) and [2011](#), Drs. Bose, Chatterjee and colleagues advanced the RSV anti-cancer construct. The animal results were particularly exciting—mice with prostate tumors were treated with the virus and within a week the tumors were gone. "We kept the mice for four months, and the tumors never came back," Dr. Bose said.

Provided by University of Texas Health Science Center at San Antonio

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