

A redeeming role for a common virus

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A common virus that can cause coughing and mild diarrhea appears to have a major redemptive quality: the ability to kill cancer. Harnessing that power, researchers at Georgetown Lombardi Comprehensive Cancer Center, part of Georgetown University Medical Center, are conducting a clinical trial to see if the virus can target and kill certain tumor types.

By the age of five, most people have been exposed to the [virus](#), called reovirus. For some, it can trigger brief episodes of coughing or diarrhea while many other don't develop any symptoms. The body simply overpowers the virus. But what scientists have discovered is that the virus grows like gangbusters inside [tumor cells](#) with a specific malfunction that leads to tumor growth. That finding led researchers to ask: Is it possible to use the virus as a treatment?

At Lombardi, researchers are collaborating with other institutions to look for an answer by conducting a phase II clinical trial for people with advanced or recurrent non-small cell [lung cancer](#) with a specific tumor profile.

"With reovirus, we're able to accentuate the positive and attenuate the negative," says the study's lead investigator at Lombardi, Deepa Subramaniam, MD, interim-chief of the Thoracic Medical Oncology Program. In other words, researchers have genetically altered the virus so that it won't replicate in a healthy cell (attenuated), which is what makes a person sick. "What's left is a virus in search of a host, and reovirus loves the environment inside a specific kind of cancer cell," explains Subramaniam.

That specific kind of cancer cell is one with malfunctioning machinery called KRAS or EGFR mutation.

"These mutations leave the cancer vulnerable to a viral take-over. Once it's in, the reovirus exploits the cell's machinery to drive its own replication. As a result, the cell is filled with virus particles causing it to literally explode."

Volunteers in the clinical trial will receive reovirus (REOLYSIN®) in addition to paclitaxel and carboplatin. The physicians will watch to see if the cancer shrinks while also seeing if this combination of drugs causes serious side effects.

"This is a subset of cancer where we haven't had many successes in terms of finding drugs that extend life after diagnosis," says Subramaniam. "This trial represents an attempt to seek and destroy cancer by choosing a treatment based on specific tumor characteristics. Preliminary data from the study should come quickly."

Researchers are also studying the effect of reovirus in other cancer types.

Provided by Georgetown University Medical Center

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