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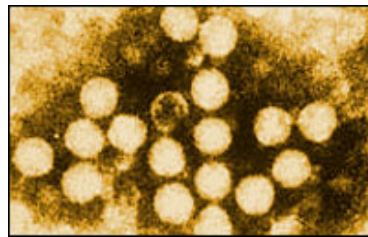
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► NEWS

December 08, 2003

Modified Poliovirus Targets Brain Cancer Cells

Under normal circumstances, being injected with the poliovirus would be considered a bad thing. But for a patient suffering from brain cancer, that could one day be an effective means of treating the disease. A modified form of polio has been tested in monkeys and kills cancer cells while leaving healthy neurons untouched. Now scientists writing in the December 9 issue of the *Proceedings of the National Academy of Sciences* have shed light on the mechanism behind this selectivity.



In the emerging field of virotherapy, researchers genetically engineer common viruses that can selectively infect and kill tumor cells. Matthias Gromeier of the Duke Comprehensive Cancer and his colleagues work with a modified poliovirus that includes part of the genetic code of the common cold, a rhinovirus. The researchers took the internal ribosomal entry site (IRES), which allows the virus to express its own genetic information within a host cell, from the rhinovirus and inserted it into the polio virus. "In cancer cells, the IRES from rhinovirus acts as the trigger that activates gene expression, but the genes being expressed—the silver bullets in the gun, so to speak—are all from the poliovirus," Gromeier explains. "The polio proteins kill the cancer cells quickly and efficiently."

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The team's latest findings suggest that the reason why the viral therapy is so discriminating has to do with how the IRES communicates with the rest of the poliovirus genome, in particular the end section known as the 3-prime nontranslated region. Gromeier and his collaborators determined that in cancer cells the two parts influence each other using a set of proteins called co-factors. In normal neurons, which lack the appropriate set of co-factors, the two sections of the modified virus cannot communicate and the virus does not reproduce. Better understanding of the treatment's exact mechanism is required before human testing can be considered. The cancer-killing polio agent is currently being produced at the National Cancer Institute, but Gromeier cautions that it must undergo extensive animal safety testing before clinical trials can commence. --Sarah


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