

Research uncovers clues to virus-cancer link

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In a series of recently-published articles, a research team from the University of North Carolina at Chapel Hill Lineberger Comprehensive Cancer Center has uncovered clues to the development of cancers in AIDS patients.

In an April article published in the journal *PLoS Pathogens*, Dirk Dittmer, Ph.D. associate professor of microbiology and immunology at UNC's School of Medicine, demonstrated that the Kaposi sarcoma associated herpesvirus (KSHV) is not only present in every tumor cell, but that the cells also transcribe microRNAs (miRNA) from the virus. This represents a collaborative effort between UNC researchers and clinicians at Beth Israel Hospital, the University of Miami and the Federal University in Bahia, Brazil.

MicroRNAs are small molecules that regulate gene expression. Scientists have hypothesized that viruses can cause cancer through a mechanism where the viral genes take over the cell and induce cancerous growth through alteration of cell miRNA, since certain kinds of miRNA are responsible for putting the 'brakes' on uncontrolled cell growth.

Dittmer's team examined samples of tissue provided with the consent of Kaposi's sarcoma patients and found that specific miRNA biomarkers accurately identify stages of tumor progression. They found that certain miRNAs were lost as the tumors progressed, effectively accelerating the cancer's growth. More aggressive tumor stages expressed higher levels of KSHV miRNA.

In second study, published June 4 in the journal Blood, the team looked for the presence of tumor suppressor mRNAs in primary effusion lymphoma and Kaposi's Sarcoma.

"We chose these two cancers because, while they are both associated with the same virus, they occur in very different types of cells," Dittmer noted.

His team found that several miRNAs known to suppress tumor activity were significantly less active in both types of cancer.

"Micro RNAs are an exciting new class of cancer markers. Knowing which ones are present in a particular [tumor](#) will help us understand the biology and develop those micro RNAs as novel cancer therapy targets.:"

Scientists believe that finding the mechanisms through which viruses take over cellular systems, resulting in cancer, is a promising strategy for cancer prevention and treatment, since it is much more feasible to block viral infection or develop specific inhibitors of the viral genes than try to inhibit all of the genetic changes within a [cancer](#).

Source: University of North Carolina School of Medicine ([news](#) : [web](#))

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