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Virus Is Linked to a Powerful Skin Cancer

By [LAWRENCE K. ALTMAN](#)

Scientists have discovered a previously unknown virus and strongly linked it with the most aggressive form of [skin cancer](#), they reported in a scientific journal on Thursday.

The [cancer](#), Merkel cell carcinoma, tends to occur most often on the sun-exposed areas of the body like the face, the head and the neck. Although it is rare, its incidence tripled from 1986 to 2001, and it now accounts for an estimated 1,200 cases in this country each year, the [National Cancer Institute](#) says.

The virus was discovered by a [University of Pittsburgh](#) team that includes Dr. Patrick S. Moore and his wife, Dr. Yuan Chang. In 1994, when they were at [Columbia University](#), Dr. Moore and Dr. Chang discovered human herpes virus 8, which causes Kaposi's sarcoma, the most common malignancy in [AIDS](#) patients.

Until the advent of transplant surgery and AIDS, Kaposi's sarcoma and Merkel cell carcinoma typically affected people older than 65. Now those people have been joined as the most frequent Kaposi's and Merkel cell sufferers by those whose immune systems have been compromised by AIDS or organ transplant drugs.

The newly discovered virus belongs to the polyoma family, which scientists have studied for more than 50 years because other members of the family have been found to produce cancers in animals. Although polyoma viruses have been suspected of causing human cancers, conclusive proof has been lacking.

The Pittsburgh scientists call the new virus Merkel cell polyoma virus. In a report published online by the journal *Science*, they said that while they suspected that it caused Merkel cell skin cancer, more work was needed to prove it.

"We can say we have a culprit with the [smoking](#) gun at the scene of the crime, but that still doesn't mean he's guilty," Dr. Moore said in a telephone interview.

"We have a long way to go to prove that this agent is really the cause," he said. "But the fact that the virus is so strongly associated with the [tumor](#) is at least a very good bet that it is playing an important role."

Dr. [Anthony S. Fauci](#), director of the National Institute of Allergy and Infectious Diseases, called the findings "very interesting and important."

"It is not every day," Dr. Fauci said, "that you have some pretty compelling molecular proof that a virus is associated, likely causally, with development of a particular cancerous process."

The polyoma virus is the seventh virus linked to human cancers, Dr. Moore and Dr. Fauci said.

The others, in addition to the Kaposi's sarcoma virus, are [hepatitis B](#) and C viruses, linked to [liver cancer](#); papilloma virus, to [cervical cancer](#); Epstein-Barr virus, to cancer of the nose and pharynx and to Burkitt's lymphoma; and HTLV-1, or human T-cell leukemia virus 1.

While Dr. Moore and Dr. Chang were at Columbia they began developing a technique called digital transcriptome subtraction, which they continued to use after moving to Pittsburgh in 2002 to seek new or known viruses in immune-related cancers.

But finding no tissue samples of Merkel cell carcinoma available at the University of Pittsburgh, they had to obtain the tissues from the Comprehensive Human Tissue Network, a nationwide tissue bank financed by the [National Institutes of Health](#) for research purposes.

The team, which also includes Huichen Feng and Masahiro Shuda, adapted its technique to benefit from developments like the human genome project.

"It took us a long time, and we made every mistake we could possibly make on this," Dr. Moore said.

The researchers found the polyoma virus in the cancers of 8 of the 10 Merkel patients whose tissues they tested. They also found that the virus integrated into the genome of the tumor cell, a discovery strengthening the belief that it plays an important role in the cancer's cause.

For control purposes, the scientists also tested for the virus among two groups of people without Merkel cell carcinoma. Evidence of the new virus was found in tissues from various body sites in 5 of the 59 people who made up one control group. Such evidence was also found in skin tissues of 4 of the 25 people in the second group, some of whom had healthy immune systems, others impaired.

The findings raise new scientific challenges. One is to determine any links between the virus and other diseases. Among this team's next steps is an effort to determine whether a virus is related to Hodgkin's and non-[Hodgkin's lymphoma](#), Dr. Moore said.

The technique used to identify the Merkel cell polyoma virus eliminates known human molecular sequences from a sample of tissue, leaving unknown or nonhuman sequences that the scientists explore in seeking a possible infectious agent. Dr. Moore said he hoped the technique would be useful in screening tissues from patients with diseases of unknown cause to find a new agent or to reduce the likelihood that they are related to one.

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