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## Tracking a New Virus

By December, 1994, Don Ganem knew his team would not be the first to identify a new virus behind a puzzling cancer in gay men.

Scientists at Columbia University had recently pulled pieces of viral DNA from a Kaposi's sarcoma (KS) tumor biopsy. The rare, disfiguring skin cancer was stealing headlines—and lives—as it swept through the homosexual community.

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The Columbia team's viral DNA bore striking similarity to several herpes viruses, and the group dubbed their find KSHV, for Kaposi's sarcoma-associated herpes-like virus. Finally, it seemed, researchers were on the track to pinning down a viral cause for KS.

Ganem was determined to play a role.

### A Change of Direction

When Ganem first joined HHMI in 1991, he and his team at the University of California, San Francisco (UCSF), had been working on hepatitis for more than a decade. He was considering a change of direction. Research on Kaposi's sarcoma caught his eye.

"I realized that KS was a great scientific problem and an important medical problem, and, unlike hepatitis B, nothing was known about the cause of KS," Ganem said. "I told myself that with the support provided by Hughes, I wouldn't just continue to go on in the same direction that I had been going in the previous decade. I would use that new support to create new projects and to take some risks."

At the time, epidemiological studies pointed to some form of sexual transmission behind Kaposi's sarcoma. But many scientists rejected the notion that a virus caused KS.

Still, Ganem was intrigued by the virus idea. His lab reasoned that if a virus did occupy KS tissue, it would leave behind telltale evidence. So, peering at KS cells, the team began to search for pieces of viral DNA absent in normal tissue. Similarly, they hunted for unusual messenger RNAs and protein antigens unique to KS.

### **Clinical Questions**

Unbeknownst to Ganem, the team at Columbia University was working on the same problem. In December, 1994, the Columbia group reported in *Science* that they had recovered DNA fragments from a KS tumor specimen. The DNA showed up in most AIDS KS tissue samples and in the lymph nodes of AIDS patients.

"This suggested to us that it was viral DNA, and it could be found in people at risk for KS," Ganem said. Going from suggestion to proven fact, however, is no easy task. To determine that KSHV causes KS—or that the virus is sexually transmitted—researchers must perform epidemiological studies based on a blood test that detects KSHV in infected patients.

Ganem is working in that direction. His team has produced enough of the elusive KSHV to make the first electron micrographs of the virus, which appeared in the March 1 issue of *Nature Medicine*. The team's virus-production capability offers scientists a source of KSHV to use in testing anti-herpes drugs or in developing a blood test to detect KSHV's presence.

"We want to use the blood test to address the question of whether transmission occurs through sexual contact," Ganem said. "We're also interested in the question of whether there's blood-borne spread of the virus. Is it present in normal, otherwise healthy blood donors?"

The change of research direction that Ganem envisioned back in 1991 has drawn him into a new world of questions about Kaposi's sarcoma.

In science, as in life, change can be very good.