

## Karagas: Curious about cancer culprit

In 2002, Dartmouth epidemiologist Margaret Karagas, Ph.D., sounded the alarm about the dangers of tanning booths. Now she may have identified another risk factor for skin cancer—human papillomavirus (HPV).

In a study published in the March 15 *Journal of the National Cancer Institute*, Karagas reported that beta HPVs may be a risk factor in developing squamous cell carcinoma—one of the most common kinds of skin cancer. The beta subtype of HPV is linked to skin cancer, while the alpha subtype is associated with cervical cancer.

Long before scientists knew that HPVs cause cervical cancer, they'd identified a link between the virus and skin cancer in people with a rare, inherited disorder called epidermodysplasia verruciformis.

**Skin:** "Most of their skin tumors contain HPV DNA," Karagas says. But it was unknown "whether HPV is causal or just present because these patients also have diminished immunity." It was also unknown whether there is a link between HPV and skin cancer in the general population. Karagas was determined to find out.



JON GILBERT FOX

**Epidemiologist Karagas has confirmed an association between a common virus and skin cancer.**

So she assembled a team that included DHMC dermatologist Steven Spencer, M.D., and others; secured funding from the National Institutes of Health; and collaborated with the New Hampshire Society of Dermatology on a population-based study of basal cell and squamous cell carcinomas. She also took advantage of a new technology she had learned about at an international meeting while she was a visiting professor in Italy.

**Lab:** Her team collected plasma samples from 252 patients with squamous cell carcinoma, 525 patients with basal cell carcinoma, and 461 control subjects. The samples were frozen and sent to a lab in Germany—one she'd heard about at the meeting. There, the samples were tested for beta HPV antibodies. The German scientists had developed a test—based on fluorescent bead technology—that can detect multiple viral antibodies simultaneously. "We were able to test for 16 different HPV types," says Karagas. "And in a week we'd have the data."

The results were statistically significant. HPV antibodies were present more often in patients with squamous cell cancer (though not those with basal cell cancer) than in the control group. Even after taking into account other risk factors—such as smoking, medical history, sun exposure, and sun sensitivity—the team still found an association between beta-type HPV and squamous cell carcinoma.

Karagas stresses that her study shows only an association between HPV and skin cancer. Further research is needed to see if HPV actually *causes* skin cancer. "The next step for us is to look at the tumors themselves" to determine whether they contain HPV, she says. "If it's true that the virus is related to skin cancer . . . it may open up a whole new way of us treating skin cancers and preventing them." LAURA STEPHENSON CARTER



**A DMS research team has received a federal grant of almost \$400,000 to develop a simple factual box, like the nutrition information panel on packaged foods, for prescription drugs.**

### Risk is revised

The risk after an initial melanoma diagnosis of developing a second melanoma—the deadliest form of skin cancer—may be higher than had been previously thought, according to a recent Dartmouth study. Of 354 individuals diagnosed with melanoma, 27 (8%) had a recurrence within two years, and 20 of the 27 had a recurrence within one year. The results "un-



derscore the importance of close surveillance of patients with melanoma," wrote researcher Linda Titus-Ernstoff, Ph.D., and her coauthors in the *Archives of Dermatology*.

### Stick 'em up

A typical dose of seasonal flu vaccine could protect five people instead of just one, according to preliminary results of a DHMC study. Kathryn Kirkland, M.D., associate director of infection control, presented the early findings at a meeting of the Society of Healthcare Epidemiology of America. While stretching the supply of seasonal influenza vaccine appears safe and effective, a similar approach probably could not be used in case of a bird-flu vaccine shortage, Kirkland cautioned. To stretch the seasonal supply, the vaccine was injected into skin rather than muscle. A bird-flu vaccine, if and when one is developed, would probably require injection into muscle.

