Cancer 'hot spots' found
Diagnosis could improve

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University of Cincinnati researchers have identified genetic "hot spots" that could predict whether a person will develop colon cancer and how aggressive the disease is likely to become.

The findings, published in today's "PLoS Genetics," are the first to explain how a gene's regulation is linked to cancer development, and to identify specific changes in a gene related to colon cancer.

Not counting skin cancers, colorectal cancer is the third most common cancer found in American adults. The American Cancer Society estimates that about 149,000 new cases were diagnosed last year, and about 50,000 people die of the disease.

Previous research has shown that plant-derived fatty acids, like those found in red meat, dairy products and other foods produced by animals that eat only plants, can accelerate cancer growth.

UC environmental health researchers, led by Xiang Zhang and department chairwoman Shuk-mei Ho, studied human tissue to see how the cancer-associated gene breaks down those fatty acids.

They found two types of genetic "hot spots" - areas of deleted genetic materials - that might be associated with more aggressive types of colon cancer, Zhang said. People with those deletions could be prone to those more aggressive lesions, Zhang said.

The team also identified specific proteins that would normally bind to the deleted sequences to help block the formation of cancer, he said.

The discoveries could lead to better methods of diagnosing and treating colon cancer, Ho said.

Standard of care now calls for screenings with colonoscopies starting at age 50. If any growths, or polyps, are found, they're usually removed surgically to prevent the development of cancer.

The UC team's findings could be used to screen people who might be at risk for developing harder-to-treat forms of colon cancer, and lead to the development of therapies to more effectively defeat those cancers, Ho said.

The screenings could also be used to help people at risk for those more aggressive cancers live a healthier lifestyle to reduce their overall colon cancer risk, she said.

"For years, scientists have believed that a diet including a large amount of red meat and low in fiber might lead to increased risk for colon cancer, but it's not that linear," Ho said.

"We need to start paying closer attention to how the environment we live in and the things we put in our bodies interact with our genetic makeup to influence our cancer risk."
The UC team expects to expand the study to include researchers at more centers. The study was funded by the National Institutes of Health and the U.S. Army Prostate Cancer Program.