



## News Release

FOR IMMEDIATE RELEASE

### **UNM Researchers Identify a “Crucial Centimeter” Around Breast Tumors**

*New research could yield changes in surgical breast tumor removal*

**Albuquerque, NM – October 3, 2011** – New research shows that visually “normal” cells immediately surrounding breast tumors share key characteristics with their malignant neighbors. Scientists from the UNM Cancer Center have discovered that non-cancerous tissue one centimeter – but not three or five centimeters – away from breast tumor tissue contains levels of the enzyme telomerase similar to that of the tumor itself. Their study, published in the September issue of *Molecular Cancer Research*, raises important new questions about the relationship between breast cancer tissue and its “microenvironment.” The new findings could have implications for surgical breast tumor removal, suggesting that slightly larger surgical margins may be useful in preventing a recurrence of breast cancer.

Telomerase is found in more than 90 percent of human tumors and can function to “immortalize” cells. When a normal cell divides, the ends of its chromosomes, called telomeres, progressively erode. Once the telomeres become too short, the cell dies, a natural process which keeps cells from dividing indefinitely. However, in some cases – as with many cancers – telomerase can add new telomere sequences to the ends of chromosomes. This removes the check on cell division and allows cells to become “immortal.”

In this study, UNM Cancer Center researchers developed a system to compare the levels of telomerase in tumors to the levels found in non-tumor tissue various distances away. They had previously shown that visually normal tissue one centimeter away expressed comparable levels of telomerase as tumor tissue; here, the researchers found that this was not true of tissue three or five centimeters away, the other distances they sampled.

Similarly, tissue within the one-centimeter radius had another key feature in common with breast tumors: short telomeres. This was not true of normal tissue further away. These shortened telomeres – while not so eroded as to kill the cell, given the telomere-promoting activity of

*“Crucial centimeter” around breast tumors, cont.*

telomerase – can lead to genetic instability and irregularities, which are thought to contribute to the development of cancer.

The UNM team had previously shown that the same critical tissue area – up to one centimeter away from breast tumors – resembles the environment found around healing wounds. This wound microenvironment provides many conditions thought to be conducive to tumor genesis.

In combination with the team’s earlier research, this latest study brings new precision to the observation that the tissue in the immediate vicinity of breast tumors, while having a normal-seeming appearance, actually consists of potentially immortalized and genetically unstable cells in a tumor-promoting microenvironment. Understanding more about how these genetic irregularities generate new tumors is an important next step that researchers intend to pursue using the methods they developed in this study. Of particular interest is whether the genetically unstable cells found around a breast tumor actually help spawn the initial tumor, or if they develop in response to it.

#### **Paper reference**

“Breast Field Cancerization: Isolation and Comparison of Telomerase Expressing Cells in Tumor and Tumor Adjacent Histologically Normal Breast Tissue” was published in the September issue of *Molecular Cancer Research*. Authors include Kristina A. Trujillo (UNM Cancer Center), William C. Hines (Lawrence Berkeley National Laboratory), Keith M. Vargas (UNM), Anna C. Jones (UNM), Nancy E. Joste (UNM Cancer Center), Marco Bisoffi (UNM Cancer Center), and Jeffrey K. Griffith (UNM Cancer Center).

#### **About the UNM Cancer Center**

The UNM Cancer Center is the Official Cancer Center of New Mexico and the only National Cancer Institute (NCI)-designated cancer center in the state. One of just 66 NCI-designated cancer centers nationwide, the UNM Cancer Center is recognized for its scientific excellence, contributions to cancer research and delivery of medical advances to patients and their families. It is home to 85 board-certified oncology physicians representing every cancer specialty and 127 research scientists hailing from leading institutions such as MD Anderson, Johns Hopkins and the Mayo Clinic. The UNM Cancer Center treats more than 65 percent of the adults and virtually all of the children in New Mexico affected by cancer, from every county in the state. In 2010, it provided care to more than 15,800 cancer patients. The Center’s research programs are supported by nearly \$60 million annually in federal and private funding.

#### **UNM Cancer Center contact information**

Dorothy Hornbeck, JKPR, (505) 797-6673, [dhornbeck@jameskorenchen.com](mailto:dhornbeck@jameskorenchen.com)

Audrey Manring, UNM Cancer Center, (505) 925-0486, [amanring@salud.unm.edu](mailto:amanring@salud.unm.edu)

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