



## 2009 Denver Projects

### Generation of a Gastrointestinal Cancer Tumor Bank

**Goal:** Develop an annotated archival tumor specimen bank from patients undergoing surgery for removal of cancers originating from the gastrointestinal tract within the past 10 years. This will be done under the auspices of a protocol approved by the Colorado Multiple Institutional Review Board (COMIRB), with collaboration between medical oncology, pathology, and surgery at the University of Colorado Denver.

In summary, the proposal is designed to obtain archival tissue to allow for the development of biomarkers that allow cancer doctors to better tailor cancer therapy to the specific genetic abnormalities occurring within an individual patient's tumor. Historically cancer therapy has been administered based upon the law of averages. The future of cancer therapy will be "personalized" cancer therapy based upon cancer genetics specific to that particular patient. However, to attain this goal cancer doctors and scientists have to work together in unique ways to obtain and accurately interpret molecular data. Support of this proposal will help to solidify the University of Colorado's role in the development of personalized therapy for gastrointestinal cancers.

### Early Detection of Lung Cancer

Lung cancer is the leading cause of cancer deaths in the United States, accounting for 30% of all cancer deaths. In 2005 alone, there were 196,687 new cases diagnosed and 159,217 deaths. Since 1960, lung cancer has surpassed all other cancer deaths for men and since 1990 has become the number one cancer killer for women. It is the leading cause of cancer deaths in Colorado as well, more than breast, prostate, and colon cancers combined.

In 1975 the 5-year survival rate for breast cancer was 75%. By 2003 it rose to 89%.

In 1975 the 5-year survival rate for prostate cancer was 69%. By 2003 it rose to 99%.

**In 1975 the 5-year survival rate for lung cancer was only 13%. By 2003 it was only 16%.**

Recently, a collaborative research link was established between Dr. Michael Weyant of University of Colorado Cancer Center and Dr. Kim O'Neill of Brigham Young University. The basis for this research focuses on Dr. O'Neill's studies of TK (Thymidine Kinase), an enzyme that is elevated in the serum of cancer patients. TK is elevated in a stage-like manner. The more advanced the tumor, the higher the level of serum TK. TK levels have also been demonstrated to accurately reflect patient response to treatment. In patients that respond to therapy, their TK levels decrease. In those that do not respond to treatment, their TK levels continue to rise.

Further research has confirmed that this elevation is due to a particular form of TK called TK1 that is over expressed specifically in cancer cells. We have now produced a monoclonal antibody that will allow the accurate assessment of TK1 levels in serum and tissue from cancer patients.



Using this technology, we are turning our attention to lung cancer to establish if this technology can be used in the **early detection**, diagnosis, prognosis and possibly therapy of lung cancer. With continued determination, an outstanding research team and a world class medical facility, this research coupled with additional funding, has great promise for finding an early detection for lung cancer.