



## Colorectal Cancer Diagnostic Markers

**Contact:** Mary Kosinski  
Phone (615) 322-9790  
mary.kosinski@vanderbilt.edu

### **Faculty:**

Dr. Robert Coffey, Department of  
Medicine, Vanderbilt University

Dr. Bruce Aronow, Division of  
Biomedical Informatics, Cincinnati  
Childrens Hospital

Dr. Timothy Yeatman, Department of  
Translational Science, H. Lee Moffitt  
Cancer Center

### **Summary:**

Vanderbilt researchers and collaborators have discovered a group of biomarkers that correlate with colorectal cancer. Using both mouse and human cells these researchers identified membrane and secreted proteins that are highly up regulated in colorectal cancer. These proteins could be developed into a non invasive blood test for routine screening for colorectal cancer.

### **Potential Market Size:**

Colorectal cancer is the second leading cause of cancer related deaths, accounting for approximately 655,000 deaths per year. According to the National Cancer Institute there were approximately 154,000 new cases of colorectal cancer and 52,180 deaths in the United States alone.

### **Current Competitive Product(s):**

Currently sigmoidoscopies and colonoscopies are used to screen individuals at risk for colorectal cancer. These types of test have several drawbacks one being that they can only detect cancer if abnormalities or polyps are already present. In addition these tests can damage the

colon by tearing or even puncturing the colon.

### **Description of Technology/Products:**

Colorectal cancer is defined by cancer in the colon, rectum and appendix. According to the World Health Organization it is the third most common form of cancer and the second leading cause of cancer-related death in the Western world, leading to 655,000 deaths worldwide per year. Age and heredity are the most common risk factors as 75% of colorectal cancer occurs in patients over the age of 50. The presence of polyps is also a risk factor. Although often benign it is thought that some polyps maybe the first sign of cancer. Screening patients through sigmoidoscopies and colonoscopies for the presence of such polyps after the age of 50 is the standard of care practiced today. Therapy includes removal of such polyps and chemotherapy. When caught at an early stage 90% of colorectal cancers are cureable and thus patients over the age of 50 are highly encouraged to be screened. Unfortunately only about 50% of these individuals are screened. Many physicians believe that the combination of the uncomfortable nature of these tests and the risk for damage that these test carry often discourages many patients from being screened routinely. Thus there is a real need for a less invasive screening test to diagnosis early stage colorectal cancer.

Vanderbilt Researchers have identified several proteins that are up regulated in colorectal cancer that could be used for noninvasive screening test for colorectal cancer. These researchers performed a comprehensive analysis of gene expression in different colon cancer models, including mice and human. Once they identified proteins that were up regulated in these colorectal models they then filtered these results for membrane and secreted proteins. The final results contain proteins that may be predictive of colorectal cancer. In addition to simple diagnostic markers this research group has then classified these proteins with specific stages of cancer. Taken together these proteins could be used to identify early onset of colorectal cancer prior to polyp formation. These results were filtered through cross species, mice and humans, and across different colon cancer models. Finally these researchers screened their results for membrane and secreted proteins.

This technology may allow for an early, non invasive detection of colorectal cancer. This type of test would be less invasive, less expensive and more comfortable for patients than what is currently available. Thus such a test may allow for a more comprehensive population screening of patients for early detection of colorectal cancer. In addition these markers would be essential in the assessment of the effectiveness of a colorectal therapy since several of the markers can be correlated with specific stages of cancer. Thus a physician would be able to follow diagnosis and successive stages of therapeutic management.

### **Intellectual Property Status:**

Two United States Provisional Patent applications have been filed with claims directed towards methods and a diagnostic system.