

# **The Research Paradigm; Scientific Agenda vs. Patient Needs**

## **I. The Center for Cancer Research and Therapeutic Development**

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The Center for Cancer Research and Therapeutic Development was founded a few years ago emphasizing prostate cancer. Normally, cancer begins with a group of cells growing out of control which acquire the ability to attract blood vessels so that they can survive and grow. Some of the cancer cells can invade to the blood vessel and travel through the vessel system to distant organs such as the bone, subsequently residing in the bone marrow microenvironment.

One lab does research on a group of proteins known as transforming growth factor beta signaling, looking at how the different isoforms of TGF beta work; these proteins are usually involved in tumor progression. Another lab is looking at a protein known as inhibitor of differentiation, which are usually involved in tumor progression, namely, as ID1, ID2, ID3, and ID4; this same lab is studying the mechanisms of how viruses can cause prostate cancer.

This speaker's lab is studying a group of proteins known as - - transcription factor, which is also involved in tumor progression, trying to determine how this protein promotes tumor progression by up-regulating reactive oxygen species, or chemicals that the body produces normally but at higher quantities in diseased states. Antioxidants normally target these reactive oxygen species. This same lab is looking at how these proteins may promote metastases to bone.

Another lab is looking at two proteins, one called P10 [phonetic] that is normally lost in both breast and prostate cancer as the cancer proteins, and one named CXCR4 [phonetic], a chemokine receptor that is usually up-regulated in cancer, and studying the inter-relationship between these two proteins. The lab is looking at how the loss of tumor suppressors permits metastases enhancing genes.

Finally, one lab is looking at the role of sterols in prostate cancer and found that high cholesterol may be associated with prostate cancer.

Money for research comes from the National Institutes of Health, from RCMI for the co-facilities, from a P20 grant, from the National Cancer Institute, from the Department of Defense, and from the Georgia Research Alliance. In the last year, we have published 11 journal articles and made 50 presentations at national meetings. We are very well equipped in facilities.