

2007 Ohio Student Research Forum

Wright State University
Dayton, OH

RESEARCH ABSTRACT FORM

TITLE: WT1 Transfections in Prostate Cancer Cells**AUTHOR:** Kimberly Bean**MENTOR(S):** Gail Fraizer**INSTITUTION:** Kent State University

The Wilms' tumor suppressor gene (WT1) is important for normal development and function of urogenital tract. There are many isoforms of WT1, but the isoform we study is a zinc-finger transcription factor that lacks the insertion of three amino acids (-KTS). WT1 has been shown to regulate androgen receptor and vascular endothelial growth factor (VEGF)(1), which both play important roles in prostate cancer development. Our hypothesis is that WT1 plays a major role in prostate cancer. There are 220,000 prostate cancer cases reported yearly. The probability of developing prostate cancer by age 65 is 1 in 6. In order to study the effect of WT1 in prostate cancer, we use *in vivo* and *in vitro* models. We study prostate cancer cells transfected with the WT1 gene to learn about the different effects of increased WT1 expression, compared to standard prostate tumor cells, and different effects of tumor growth in mice. Initially we used one LNCaP prostate cancer cell line stably transfected with WT1 and tested in both mice and *in vitro* (2). To improve upon this model system we are creating several prostate cancer cell lines with fluorescently tagged WT1 that can be visualized by microscopy (3). This cell line could show the location of WT1 protein within cells and of WT1-LNCaP cells in mouse tumors. With this model we will be able to test our hypothesis and determine the role of WT1 in prostate cancer.

References:

1. Hanson, Julie, Gorman, Jacquelyn, Reese, Jennifer, Fraizer, Gail. Regulation of vascular endothelial growth factor, VEGF, gene promoter by the tumor suppressor, WT1. *Front Bio Sci* 12:2279-2290, 2007.
2. Fraizer, Gail, Leahy, Rachel, Priyadarshini, Subhadra, Graham, Kylie, Delacerda, Jorge, Diaz, Miguel. Suppression of prostate tumor cell growth *in vivo* by WT1, the Wilms' tumor suppressor gene. *Int Jrl Onc* 24: 461-471, 2004.
3. Dutton, J. R., Lahiri D., Ward A. Different isoforms of the Wilms' tumour protein WT1 have distinct patterns of distribution and trafficking within the nucleus. *Cell Proliferation* 39: 519-535, 2006.