VAI researchers develop tool to help study prostate cancer

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Van Andel Research Institute (VARI) researchers have developed a new method to better study the cells that line and protect the prostate in relation to the development of cancer. Using the model, they found that normal cells and cancer cells depend on different factors to survive, which could aid in discovering how to target cancer cells without affecting normal cells when developing treatments.

Prostate cancer is the most common form of cancer in men, with more than 192,000 new cases and more than 27,000 deaths reported in the United States in 2009 (Source: National Cancer Institute).

"This new model will serve as a valuable tool for understanding secretory prostate epithelial cells, which until now have not been available for extensive analysis," said VARI Scientific Investigator Cindy Miranti, Ph.D., whose lab published its study in a recent issue of the Journal of Cell Science.

Epithelial cells line and protect the internal and external organs and structures of the body. The prostate contains two types of epithelial cells, basal and secretory, and prostate cancers arise from abnormal cells as they are converted from basal into secretory cells in the body.

Prior to this study, scientists were able to culture basal cells, but not secretory cells. Using the model, researchers found that, unlike cancer cells, normal secretory cells are not dependent on the male sex hormone androgen for survival, but are dependent for survival on binding to each

other via the protein E-cadherin.

"Prostate cancers are dependent on androgen for survival, so we were interested in whether normal secretory prostate epithelial cells also depend on androgen," said Dr. Miranti. "However, the cell culture models available didn't allow us to study secretory cells, so we generated them by reconstructing the natural conversion process from basal into secretory cells in a petri dish."

The differences in how cancer cells and normal cells control their survival can be exploited to develop therapies that preferentially target the tumor cells, but not the normal cells.

"This cell model will be extremely useful to investigators who are interested in studying the cell biology of prostate cancer as well as benign prostate hyperplasia," said Donald J. Tindall, Ph.D., Professor, Director & Vice Chair of Urologic Research at the Mayo Clinic College of Medicine. "Such studies should facilitate our understanding of the cellular mechanisms involved in progression of these diseases and may lead to new prognostic capabilities and therapeutic interventions."

Provided by Van Andel Research Institute