

Cancer cells propagated from early prostate cancer

September 25 2013

A team of cancer researchers at the University of California, San Diego has identified the existence of precursor cells in early prostate cancers. These cells are resistant to androgen-deprivation therapy, and may drive the subsequent emergence of recurrent or metastatic prostate cancer.

The scientists' findings, suggesting that potentially lethal castration-resistant prostate [carcinoma cells](#) already exist in some cancer patients at the very early stages of their disease, will be published by *PLOS ONE* on September 25, 2013.

The work describes the isolation and propagation of the earliest prostate cancer cells yet identified in human prostate cancer biopsy samples, allowing the detailed [molecular characterization](#) of these very early-stage cancer cells, including analysis of gene expression and mutations.

"Full molecular characterization of the earliest prostate cancer cells will facilitate identification of pharmacological approaches which are not currently available," said Martin Haas, PhD, professor of biology and oncology at UC San Diego Moores Cancer Center. "Development of such early-stage treatments could reduce the incidence of cancer progression to recurrent invasive or metastatic disease."

Treatments for prostate cancer often target androgen pathways. Androgens are [male hormones](#), such as testosterone, that research shows can feed [prostate tumors](#). Castration-resistant (CR) prostate cancer is prostate cancer that has become resistant to medical or surgical

treatments that lower testosterone.

The UC San Diego researchers, including Stephen M. Baird, MD, and Daniel J. Donoghue, PhD, isolated a class of prostate cancer cells from early-stage human prostate carcinomas that had been removed by surgical prostatectomy and cultured the cells in a synthetic medium devoid of steroid hormones. In this way, early [prostate cancer cells](#) (CR-PrCA) were isolated from dozens of early Stage I prostate carcinoma cases.

When transplanted into the anterior prostates of male SCID mice the cultured cells generated locally invasive human prostate cancers. In castrated mice, in the absence of androgen, the cells grew locally as non-differentiated human cancer cells.

Extensive characterization of these CR-PrCa cells has shown them to share characteristics with multipotent cancer stem or progenitor cells that possess basal prostate cell characteristics.

"One interpretation of our data suggests that the culture-isolated CR-PrCa cells are precursors which, after additional progression steps, would lead to recurrent invasive or metastatic disease," said Haas. "In fact, the cancers that were generated by transplantation into intact SCID mice of the cultured human CR-PrCa cells were pathologically indistinguishable from the original cancer tissue from patients used to grow the cells in culture," he explained.

The hope is that possible future treatments targeting these early-stage prostate cancer [precursor cells](#) might increase cures and improve long-term survival rates.

According to the American Urological Association, prostate cancer is the most commonly diagnosed solid organ malignancy in the United

States and remains the second leading cause of cancer deaths among American men. Approximately 240,000 new diagnoses of prostate cancer and over 28,000 deaths were estimated in the U.S. in 2012.

Provided by University of California - San Diego

Citation: Cancer cells propagated from early prostate cancer (2013, September 25) retrieved 5 May 2024 from <https://medicalxpress.com/news/2013-09-cancer-cells-propagated-early-prostate.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.