

Harsh Jain

MATHEMATICAL BIOSCIENCES INSTITUTE, OHIO STATE UNIVERSITY
e-mail: hjain@mbi.osu.edu

Avner Friedman

MATHEMATICAL BIOSCIENCES INSTITUTE, OHIO STATE UNIVERSITY

Steven Clinton

COMPREHENSIVE CANCER CENTER, OHIO STATE UNIVERSITY

Arvinder Bhinder

COMPREHENSIVE CANCER CENTER, OHIO STATE UNIVERSITY

The Impact of Androgen Ablation on Mutation Acquisition in Prostate Cancer

Prostate cancer (CaP) is the second most common cancer in American men. Although the majority of patients diagnosed with CaP are cured with primary treatment, it remains the second lead cause behind only lung cancer, of male cancer-related deaths in the western world. A few features set it apart from other cancers; it develops slowly over a period of years; CaP cells are dependent on male sex hormones for growth; treatment in the form of continuous androgen ablation fails due to the emergence of castrate-resistant CaP cells. Therefore, it has been proposed that intermittent androgen ablation therapy might be a better strategy for treating CaP. I present a model of prostate growth in humans, which can simulate the onset of CaP, as well as explain the emergence of resistance in response to therapy. Our model shall incorporate a variety of cell types such as healthy and CaP cells, as well as detailed biochemical pathways crucial to the growth of these cells. Fits to individual patient data will also be presented. By being able to distinguish between various drug actions, and being fitted to individual patient data, we hope to develop a truly prescriptive tool to aid physicians in treatment choices for CaP patients.