# USING AN ANIMAL MODEL OF HUMAN PROSTATE CANCER TO TEST NEW NANO-THERAPIES

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Prostate cancer is one of the leading cancers among males, with 1 in 9 men being diagnosed in their lifetime. In 2018, there were 358,989 prostate cancer deaths, a 28% global mortality rate. Although organ-confined disease is curable, metastatic prostate cancer is almost always lethal. New therapies to treat lethal forms of prostate cancer are desperately needed. Our laboratory has developed a mouse model that recapitulates key features of lethal human prostate cancer. The model, termed BMPC, is genetically engineered to harbor genomic changes that are common in human prostate cancer: overexpression of the oncogene MYC, and loss of the PTEN tumor suppressor. We hypothesized that BMPC mice could be used to test new prostate cancer treatments, including those based on nanoparticles. Nanoparticles are 10 to 100 nanometer particles that can be designed to carry drug cargoes directed to a specified target. Here, we report progress toward the development of a cohort of BMPC mice that will be treated with an experimental nanoparticle formulated to deliver mRNA encoding PTEN. Restoration of PTEN is anticipated to slow cancer progression by eliciting an anti-tumor immune response. To date, we have screened mice for the presence of the MYC and PTEN transgenes, and have identified several BMPC males. A pilot study using fluorescent nanoparticles is currently in progress.