

## Inhibiting Cancer Progression with pH Buffers

**Background:** According to the National Cancer Institute, in 2006 the number of US deaths due to cancer was projected to total approximately 564,830. Malignancy and metastasis significantly increase the rate of cancer mortality. A remarkable hallmark of metastatic tumors is a high uptake and metabolism of glucose. This, combined with poor perfusion, lead to acidity in the malignant tumor microenvironment. Recent in vitro and in vivo studies have shown that this acidic pH is a significant contributor to a cancer's ability to invade and metastasize.

### Applications:

- *Potential adjuvant cancer therapy to neutralize the acidity of the tumor microenvironment to help reduce tumor number and tumor invasiveness*
- *General investigative research tool for studying how tumors behave*

### Advantages:

- *This therapy will be orally available and require frequent (daily) administration*
- *Work is on-going to optimize the efficacy and formulation of this therapy that will make it economically viable and easy for patients to use*

**The Technology:** University of Arizona scientists are developing a novel therapy to treat cancerous tumors by targeting the acidic tumor microenvironment. The purpose of targeting the acidic extracellular tumor microenvironment with pH buffers is that this tumor acidity is implicated in possibly increasing tumor invasiveness and metastatic potential. While the modification of pH is a long-standing and controversial topic in the area of cancer treatment, prior work has shown that the manipulation of tumor pHe (extracellular tumor pH) can affect the response of tumors to ionizable chemotherapeutics. More recent work has shown a remarkable ability to inhibit experimental metastases. Current work on this technology is focused on optimizing formulations for delivery/efficacy, and it is also focused on making synthesis of the therapy economically feasible.

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**Status:** Available for Exclusive License

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