Combination Therapy for Prostate and Breast Cancer

Summary (1024-character limit)
Researchers at the National Cancer Institute developed a novel method of immunogenic modulation in androgen and endocrine deprivation therapy. A combination of hormone therapy with immunotherapies such as PROSTVAC™, a Brachyury vaccine, PROVENGE™, ipilimumab, nivolumab, XOFIGO™, PANVAC, a yeast-MUC-1 immunotherapeutic, or HERCEPTIN™ can benefit prostate and breast cancer patients, especially those who have acquired resistances. The researchers seek parties to co-develop this method.

NIH Reference Number
E-257-2014

Product Type
• Therapeutics

Keywords
• androgen deprivation, endocrine deprivation, cytotoxic T lymphocyte, CTL

Collaboration Opportunity
This invention is available for licensing and co-development.

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Description of Technology
Endocrine deprivation therapy and other hormone therapy treatments are the standard of care for prostate cancer and breast cancer using FDA approved agents such as enzalutamide and abiraterone. However, some prostate cancer and breast cancer patients acquire a resistant to these existing therapies. There is an unmet need for novel, combination therapies to treat these cancer patients.

Researchers at the National Cancer Institute Laboratory of Tumor Immunology and Biology, developed a method of immunogenic modulation in androgen and endocrine deprivation therapy. They showed that immunogenic modulation by two approved drugs, enzalutamide and abiraterone, increases cytotoxic T lymphocyte (CTL) sensitivity in prostate tumor and breast cancer cells. The researchers observed a reduction in prostate cancer cell growth by treating cancer cells with a combination of androgen deprivation therapy and immunotherapy. The researchers also applied this method to reduce breast
cancer cell growth using a combination of endocrine deprivation therapy and immunotherapy. These results are distinct from the known mechanism of action of androgen and endocrine deprivation therapeutics, and highlight a mechanism whereby hormone deprivation therapy can be used in combination with immunotherapy to enhance antitumor activity.

The National Cancer Institute, Laboratory of Tumor Immunology and Biology, seeks parties to co-develop this combination of hormone therapy and immunotherapy for the treatment of prostate and breast cancer.

**Potential Commercial Applications**
- Combination immunotherapy regimen for prostate and breast cancer treatment

**Competitive Advantages**
- Beneficial to prostate and breast cancer patients that have acquired resistance to the stand-alone androgen or endocrine deprivation therapy

**Inventor(s)**
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**Development Stage**
- Pre-clinical (in vivo)

**Publications**

Ardiani A, et al. Combination Therapy with a Second-Generation Androgen Receptor Antagonist and a Metastasis Vaccine Improves Survival in a Spontaneous Prostate Cancer Model. [PMID 24048332]

Ardiani A, et al. Genome-wide shRNA screen revealed integrated mitogenic signaling between dopamine receptor D2 (DRD2) and epidermal growth factor receptor (EGFR) in glioblastoma. [PMID 24658464]

Kwilas AR, et al. Improving clinical benefit for prostate cancer patients through the combination of androgen deprivation and immunotherapy. [PMID 26155431]

**Patent Status**
- **U.S. Provisional**: U.S. Provisional Patent Application Number 62/043,880, Filed 29 Aug 2014
- **Foreign Filed**: Foreign Filed - Patent Application PCT/US2015/047538, Filed 28 Aug 2015
- **U.S. Patent Filed**: U.S. Patent Application Number 15/507,316, Filed 28 Feb 2017

**Therapeutic Area**
- Cancer/Neoplasm

NCI Technology Transfer Center