



Antibody Therapy for Inhibiting Bladder Cancer and Prostate Cancer Metastasis

Tech ID: 20173 / UC Case 2005-098-0

SUMMARY

UCLA has a robust intellectual property position on antibody-based diagnostics and therapeutics against N-cadherin for the treatment and detection of prostate and bladder cancers. The research and development leading to this promising technology has been conducted by Dr. Robert Reiter, Professor of Urology and Director of UCLA's Prostate Cancer Program.

BACKGROUND

The transition from androgen-dependent prostate cancer to castration-resistant prostate cancer marks an inevitable progression to more aggressive and metastatic disease. Survival after this transition drops significantly. The expression of N-cadherin, a transmembrane glycoprotein involved in cell-cell adhesion, has been shown to be associated with high-grade prostate cancer and metastasis by numerous studies. To date, however, therapeutic approaches targeting N-cadherin have not been tested for efficacy. Dr. Reiter's group has generated humanized monoclonal antibodies (mAbs) to neutralize the metastatic properties of N-cadherin upregulation. In their *in vivo* studies, mAbs targeting different extracellular domains of N-cadherin demonstrated inhibition of local invasion and metastasis, and at high doses, led to completed regression.

INNOVATION

By developing N-cadherin-specific antibodies and demonstrating their anti-tumor activity, Dr. Reiter's laboratory has developed the foundation on which to realize anti-N-cadherin therapy for patients. In a seminal paper published in Nature Medicine, Dr. Reiter's group demonstrated that their antibodies could slow growth of prostate cancer xenografts, block invasion and metastasis, and at high doses, allow complete regression *in vivo*.

N-cadherin expression is positively correlated to progression in bladder cancer, a disease that claims nearly 75,000 lives annually in the U.S. Dr. Reiter's group has further demonstrated that bladder cancer patients with an elevated N-/E-cadherin ratio have the worst prognosis, and their biochemical studies suggest that anti-N-cadherin antibodies are promising therapeutics for bladder cancer.

APPLICATIONS

- ▶ Antibody therapy for invasive prostate and bladder cancers.
- ▶ Research reagent for the two receptors.

ADVANTAGES

- ▶ Potential application to other metastatic epithelial cancers besides bladder and prostate.
- ▶ Antibody therapy can be used alone or in combination with other small molecule inhibitors of mTOR and EGFR.
- ▶ The researchers have experience in developing therapeutic antibodies for previously identified targets. One of these targets is the prostate stem cell antigen (PSCA) which had been successfully licensed and is being commercialized.

STATE OF DEVELOPMENT

The overexpression of one of the cell surface receptors has been confirmed in both prostate and bladder cancers. A neutralizing antibody for this receptor has been shown to block bladder cancer invasion *in vitro* and can decrease Akt phosphorylation. The second receptor has been shown to be upregulated in LAPC 9 androgen independent tumors, but the antibody for it has not yet been developed.

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INVENTORS

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OTHER INFORMATION

KEYWORDS

diagnostic therapeutic bladder

prostate cancer marker biomarker emt

epithelial mesenchymal transition

antibodies antibody

CATEGORIZED AS

- ▶ Medical
 - ▶ Disease: Cancer
 - ▶ Therapeutics

RELATED CASES

2005-098-0, 2008-551-0, 2008-773-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,663,635	03/04/2014	2005-098

RELATED MATERIALS

- ▶ Monoclonal antibody targeting of N-cadherin inhibits prostate cancer growth, metastasis and castration resistance. *Nat Med.* (2010)
- ▶ Phospho-Akt pathway activation and inhibition depends on N-cadherin or phospho-EGFR expression in invasive human bladder cancer cell lines. *Urol Oncol.* (2010)

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