Washington University in St. Louis
Office of Technology Management

UROPATHOGEN VACCINES

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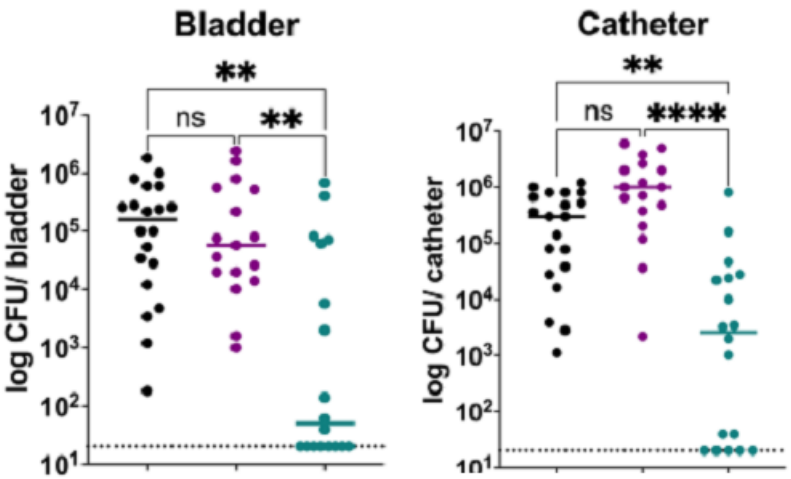
T-020120

Technology Description

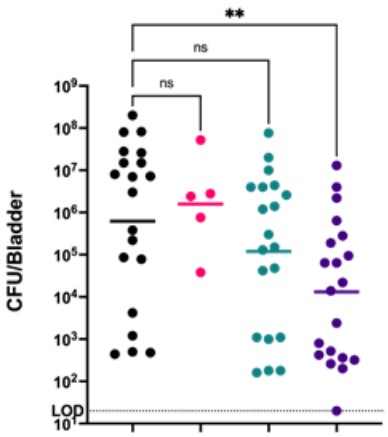
Researchers in Scott Hultgren's laboratory at Washington University have created two prospective vaccine treatments designed to prevent the colonization of prominent uropathogens. These vaccines have potential for treating urinary tract infections (UTIs) with specific microbial targets below.

Preliminary in vivo data of T-020120. Data shown is 24h after infection, where 4 weeks after T-020120 immunized mice were catheterized and transurethrally infected with $2x10^8$ cfus of A. baumannii. As shown, T-020120 (green, right) effectively reduces microbial titers in both bladder and catheter relative to mock (black, left) and less effective biologic (purple, center).



T-020120 is a naturally occurring biologic that specifically targets *Acinetobacter baumannii*, a prominent multi-drug resistant bacteria that is the main source of catheter-based infections in intensive care settings.

Preliminary in vivo data of T-020501. Data shown is 24h after infection, where mice in an acute prophylaxis model are given 0.5 mg of T-020501 (purple, rightmost) 3 hours prior to UTI89 infection. T-020501 can effectively reduce microbial titers in the bladder and urine (not shown) relative to mock (black) and two other prospective mAb candidates tested (red, green).



The specific mechanism of action for T-020120 has been verified *in vitro*, where mutations of the biologic's binding pocket causes significant decreases in efficacy. Immunization with T-020120 results in decreased levels of *A. baumannii* colonization.

T-020501 is a monoclonal antibody targeting the FimH protein of several common UTI microbes including UPEC (*E. coli*) and *Klebsiella pneumoniae* (*K. pneumoniae,* KP). T-020501 is generally applicable to UTI infections, can effectively protect against in mice *in vivo* and demonstrate direct inhibition of microbial colonization *in vitro*.

Stage of Research & Publications

Both technologies have preliminary *in vivo* data in UTI mouse models of infection and manuscripts are in submission.

Key Advantages

- Prospective new strategy of treatment for a challenging public health problem - UTI

Patents

Provisional patent filed for both technologies.