Washington University in St. Louis
Office of Technology Management

TARGETING B CELLS FOR ANTIBODY-MEDIATED GRAFT REJECTION

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T-018682

Disease Indications

- Solid tumor transplant – allosensitization and antibody-mediated rejection
- Autoimmune disease – antibody-mediated autoimmune diseases
- Blood transfusion - antibody-mediated hemolysis

Drug type: Biologic – engineered protein

Drug class: First in class

Technology:

A recombinant fusion protein that depletes B cells in the recipient that are specific to the donor HLA. The fusion protein offers a targeted therapy for antibody-mediated rejection in the post-transplant setting.

Key Advantages:

- Universal strategy to remove undesirable alloantibodies or autoantibodies
- Targets only donor specific cells without global immunosuppression
- Increased graft survival

Stage of Development:

Proof of concept. A fusion protein targeting A2 has been created and has been shown to specifically kill hybridoma cells expressing A2 but not hybridoma cells expressing other HLAs. Studies demonstrating the efficacy of the fusion protein *in vivo* using a murine alloimmunization model are underway.

Patent: Pending

Background:

Donor-specific antibodies (DSAs) to human leukocyte antigens (HLA) are a leading risk for organ rejection and shortened graft survival after organ transplantations. These antibodies are usually produced as a result of immunization through previous transplantation, pregnancy, or blood transfusion. Contemporary serology testing can detect and identify specific anti-HLA antibodies in a transplant candidate. Donors expressing the target antigens are typically avoided if a candidate has the corresponding antibodies. For highly immunized candidates with many anti-HLA antibodies, it is challenging to find a serologically compatible donor, which results in prolonged waiting. In the post-transplant setting, DSA can develop through a memory response or over time and cause antibody-mediated rejection.