May 20th, 12:30 PM

Discovery and Development of Human Monoclonal Antibodies to Block RhD Alloimmunization During Pregnancy

Tushar Gupta
*University of Massachusetts Medical School, tushar.gupta@umassmed.edu*

Melissa Gawron
*University of Massachusetts Medical School, melissa.gawron@umassmed.edu*

Colby A. Souders
*University of Massachusetts Medical School, Colby.Souders@umassmed.edu*

*See next page for additional authors*

Follow this and additional works at: [http://escholarship.umassmed.edu/cts_retreat](http://escholarship.umassmed.edu/cts_retreat)

Part of the [Amino Acids, Peptides, and Proteins Commons](http://escholarship.umassmed.edu/cts_retreat), [Hematology Commons](http://escholarship.umassmed.edu/cts_retreat), and the [Therapeutics Commons](http://escholarship.umassmed.edu/cts_retreat)


This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in UMass Center for Clinical and Translational Science Research Retreat by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
Presenter Information

Keywords
pregnancy, alloimmunization, Rh factors, red blood cells

Creative Commons License
This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License.
Discovery and Development of Human Monoclonal Antibodies to Block RhD Alloimmunization During Pregnancy.

Tushar Gupta1, Melissa Gawron1, Colby Souders1, Michael Brehm2, Dale Greiner2, Leonard Shultz3, Smita Jaiswal2, Sean McCauley2, Ann Dauphin2, Jeremy Luban2, Lisa Cavacini1

1MassBiologics of the University of Massachusetts Medical School and 2University of Massachusetts Medical School, Worcester MA. 3The Jackson Laboratory, Bar Harbor, ME

Exposure of an Rh negative mother to red blood cells (RBCs) of an Rh positive fetus results in alloimmunization and development of anti-RhD antibodies. The anti-RhD antibodies cause hemolytic disease of the new born babies during subsequent pregnancies. Current prophylactic treatment involves polyclonal anti-RhD IgG purified from plasma of humans and is administered in approximately 20% of pregnancies. While the current prophylaxis is effective, it involves the use of human plasma and non-RhD specific antibodies, thus posing a risk of transmitting infections and undesired antibody reactions. Moreover, there is a serious scarcity of plasma donors to meet the requirement of anti-RhD antibodies. In this study we propose to discover and develop anti-RhD monoclonal human antibodies to replace the current polyclonal prophylaxis. We are using humanized BLT mice (fetal CD34+ stem cells, liver and thymus) reconstituted with RhD negative donor material and were immunized by using adenovirus containing RhD transgene. Serum samples were collected after 4-6 weeks of immunization. Our results show that the RhD immunized mice had considerably higher titer of IgG and IgA antibodies in the serum compared to the control, suggesting an immune response developed upon immunization. Splenocytes from antibody producing mice will be fused with a human fusion partner for the isolation of hybridomas producing human monoclonal antibodies. The immunoreactivity and functional activity of these antibodies will be discussed.

Tushar Gupta, PhD
Postdoctoral Scientist I
MassBiologics
Tushar.Gupta@umassmed.edu