

# NEXT GENERATION ANTI-HUMAN GLOBULIN REAGENTS

## To learn more

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**BACKGROUND:** Anti-Human Globulin (**AHG**) is a broadly used reagent that is an essential component of any test that detects human immunoglobulin G (IgG). In the case of transfusion medicine, this includes screening for alloantibodies and autoantibodies, as well as crossmatching between donor cells and recipient serum. In a broader context, AHG is an essential component to detecting alloantibodies in transplantation, autoantibodies in a wide variety of autoimmune diseases, and infectious disease screening that is broadly used for diagnosis and epidemiology.

**PROBLEM:** Human IgG includes four different subtypes (IgG1, IgG2, IgG3, and IgG4). However, it is now understood that human biology is much more complex, as there is wide variation amongst people within these four IgG subtypes; in particular, many genetic variations within IgG subtypes have been identified, called isoallotypes (29 isoallotypes have been published).

**ISSUES:** Some existing monoclonal AHG fail to recognize all of the human isoallotypes (blindspots). This can lead to false negative tests in people who carry certain variants in genes, resulting in severe mortality and morbidity associated with incompatible transfusions/transplantations. In addition, these blindspots can lead to missed diagnoses of viral infections and autoimmune diseases, as well as missed immunization to fetal blood cells in pregnant women that can ultimately result in the death of the fetus.

IgG subtype specific reagents are highly flawed. Some IgG subtype reagents have blindspots to some IgG isoallotypes, while others cross react with isoallotypes of the wrong IgG subtype. These problems lead to flawed interpretations of IgG subtypes, which is becoming increasingly important in diagnosing certain immune diseases.

**SOLUTION:** Bloodworks has invented a proprietary platform to test the reactivity of AHG reagents with each of the known 29 isoallotypes. Using this platform we have now generated next generation AHG reagents thoroughly characterized to avoid the problems with current AHG.

- A blend of monoclonal anti-IgG have been isolated that recognizes all 29 isoallotypes - no blind spots or false negatives.
- This blend has been specifically chosen to bind multiple epitopes around IgG, such that should any new variants be described, it is unlikely it would not also be detected.
- As a monoclonal blend, this provides consistent, stable manufacturing (unlike polyclonal serum from animals).
- We have also isolated new IgG subtype specific monoclonal antibodies that fix the blindspot with existing reagents.

## **PARTNERING OPPORTUNITIES:**

- Licensing agreements
- Collaborative research and development opportunities

