

Fc-engineered IgG1 & IgG3 variants with improved FcRn binding through REW amino acid substitutions

The technology is a platform that enhances the binding properties of IgG1 and IgG3 antibodies by engineering their Fc regions. This modification improves the interaction with the neonatal Fc receptor (FcRn), potentially extending the antibodies' half-life and efficacy. The platform offers broad applicability across therapeutic areas, enabling the development of biologics with enhanced performance for a range of clinical needs.

Business Opportunity

This technology is a platform for engineering and enhancing therapeutic antibodies through optimized Fc-region modifications. By improving the interaction with the neonatal Fc receptor (FcRn), the platform has the potential to extend the serum half-life of antibodies, enhance their stability, and improve therapeutic efficacy. This approach provides a versatile advantage applicable across various therapeutic areas, including inflammatory diseases, oncology, and infectious diseases, where biologics play a vital role. The unmet market need addressed by this innovation stems from limitations in current antibody therapies, such as the need for frequent dosing and associated patient burden. By extending antibody half-life, this technology could reduce dosing frequency, improving patient adherence, lowering healthcare costs, and offering a competitive edge in crowded biologics markets. With the global biologics market valued at over \$400 billion and continuing to grow, this platform can be leveraged across multiple indications, enhancing market potential. For example, in the field of autoimmune diseases, over 100 million patients worldwide could benefit from improved therapies with enhanced dosing regimens. The business model for commercializing this asset involves field-specific licensing agreements, enabling the application of the platform across various therapeutic areas. An example of this model's success includes its current adoption by licensees for specific applications, with further agreements targeted globally. Ongoing developments and collaborations suggest significant traction and market interest. The technology's strong patent position in major jurisdictions provides a solid basis for commercialization and future partnerships. With a defined path to market through partnerships in both established industry and potential spin-outs, this platform is well-positioned to support the creation of next-generation therapeutic antibodies that address key challenges in modern medicine.

Technology Description

The described technology is an advanced antibody engineering platform that modifies the Fc regions of IgG1 and IgG3 antibodies to enhance their binding affinity for the neonatal Fc receptor (FcRn). This optimization strengthens the interaction between the antibody and FcRn, promoting recycling and reducing degradation. The result is a significant extension of the antibody's half-life in circulation, improving its stability and therapeutic action over time. The key innovation lies in specific amino acid modifications within the Fc region, which fine-tune its

Category

Therapies/Biologics

Authors

Peter Skorpil

Kirsten Stangebye

Further information

Peter Skorpil

peter.skorpil@inven2.com

View online



structural interaction with FcRn without affecting the antibody's ability to bind to its target antigen. This makes the technology adaptable to a wide range of therapeutic antibodies across indications. What sets this platform apart from existing solutions is its ability to extend the dosage intervals of antibody-based treatments, reducing the need for frequent administration. This can enhance patient compliance and decrease the overall cost of treatment. The versatility of the system also allows its application in various therapeutic areas such as autoimmune disorders, infectious diseases, and oncology. As a product, the engineered antibodies provide an improved therapeutic profile by maintaining efficacy while offering logistical and economic advantages to healthcare systems and patients. The technology is applicable for both existing antibody treatments that can be reformulated and as a foundation for the development of new therapeutics targeting chronic diseases.

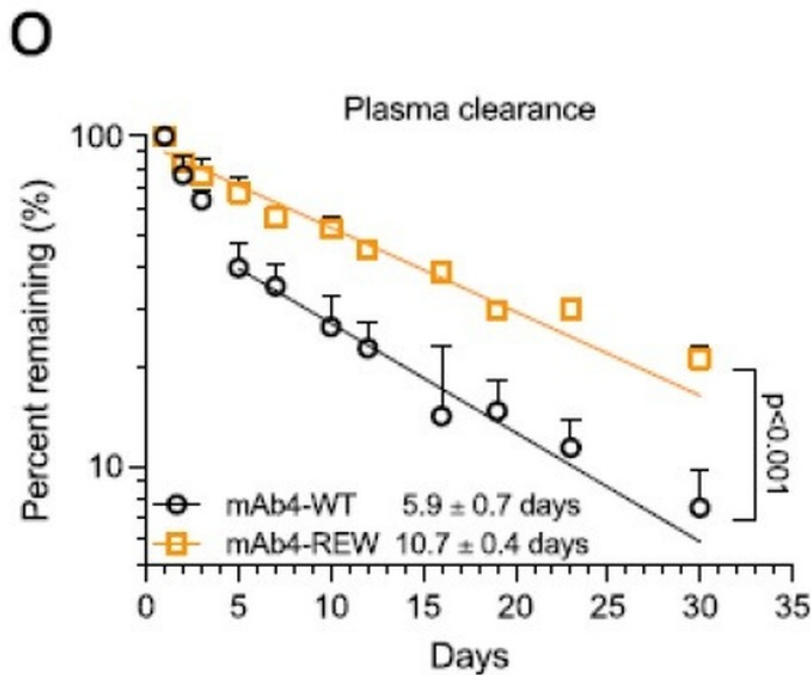


Fig. 1: [Figure text]

Intellectual Property

The intellectual property associated with this project includes: Platform Technology: Fc-engineered IgG1 and IgG3 variants with improved binding to the neonatal Fc receptor (FcRn). Patents: Multiple granted patents, including in major jurisdictions such as the United States, Japan, China, South Africa, and Israel. Additional patent applications pending in other key jurisdictions globally. A separate patent application filed for an antibody combining the REW technology with a TNF α -specific antibody. Licensing Rights: Exclusive licensing agreement with one company for specific applications in the TNF α field, with broader rights available for other therapeutic areas. The intellectual property strengthens the platform's viability for therapeutic and commercial applications through its robust global patent coverage and modular licensing potential.