Foxp3-DTR Mutant Mice for Studying Regulatory T Cells

Biomaterial – Mouse

Biomaterial Description

The Foxp3-DTR knock-in mice are genetically engineered to express the human diphtheria toxin receptor (DTR) and EGFP genes from the Foxp3 locus. These mice offer unparalleled capabilities for visualizing and selectively ablating regulatory T cells (Tregs) from injection of DTR, without disrupting endogenous Foxp3 expression. Foxp3 is a crucial transcription factor essential for the development and function of regulatory T (Treg) cells, which play a vital role in suppressing self-reactive T cells and preventing certain autoimmune diseases. The Foxp3-DTR mutant mice can be used to study the role of Treg cells in a variety of experimental models of autoimmunity, tumor immunity, transplantation, and infection.

Applications

-Autoimmune Disease Research: Investigate the mechanisms by which Tregs prevent fatal autoimmunity. This can lead to the development of novel therapeutic strategies for autoimmune diseases.

-Cancer Immunotherapy: Explore the role of Tregs in tumor immunity and develop targeted therapies to enhance anti-tumor responses.

-Transplantation Biology: Study the impact of Tregs on graft acceptance and rejection, paving the way for improved transplantation outcomes.

-Basic Immunology: Gain insights into the fundamental processes of immune regulation and tolerance, contributing to the broader understanding of immune system function.

Advantages

-Visualization: Expression of EGFP allows for precise visualization of Tregs, facilitating detailed studies on their role in immune regulation and autoimmunity.

-in vivo Cell Ablation: Expression of DTR enables inducible cell ablation in vivo, providing researchers with a powerful tool to selectively eliminate Tregs and study their functions in real-time.

-Versatility: Suitable for a wide range of immunological studies, including autoimmune disease research, cancer immunotherapy, and transplantation biology.

Technology ID

INV 44075

Category

Research Tools/Biological Materials/Mouse

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References

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