Inducible Transgenic Mouse Model for Hypertrophic Cardiomyopathy and Heart Failure

“This first-of-kind mouse model is useful for drug-discovery studies that focus on dilated cardiomyopathy and heart failure. Mice are born expressing the recombinant protein and the disease condition is induced later with an injection of tamoxifen, which allows researchers to control the onset of the disease.”

— Dr. Richard Z. Lin, M.D., Professor, Department of Medicine and Physiology and Biophysics, Stony Brook University

Background:
Cardiomyopathy is a primary disease that affects the muscles of the heart, prompting one of the most common causes of death — heart failure. Specifically, hypertrophic cardiomyopathy is a form of heart disease that thickens a portion of the myocardium along the walls of the heart and causes sudden unexpected cardiac death across many age groups. A sufficient murine model in needed to study this heart disease and other disabling cardiac symptoms.

Technology Description:
Dr. Richard Z. Lin, M.D., professor in the Department of Medicine and Physiology and Biophysics at Stony Brook University, has developed a novel mouse model for studying heart failure. These inducible transgenic mice exhibit the pathophysiology associated with human cardiomyopathy via the controlled expression of a modified form of the G-alpha-q signal transduction molecule in cardiac myocytes. Mice are born expressing the recombinant protein, but development of the disease condition is not induced until three to four weeks post-injection with tamoxifen. This new mouse model is useful for drug-discovery studies focusing on dilated cardiomyopathy and heart failure.

Advantages
This mouse model allows:
• Testing for therapeutic compounds and novel cardiomyopathy treatment strategies.
• A comprehensive in vivo model for studying human heart disease.
• Researchers to induce and control the disease onset, unlike other animal models.
• Mice to develop normally without surgical interaction.

Applications
• Mouse model
• Drug discovery
• Therapeutic screening
• Heart failure

Patents / Publications:

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