# Utilization of Mechanically Simulated Kangaroo Care as a Novel Homeostatic Method to Treat Mice Carrying a Remutation of the Ppp1r13l Gene as a Model for Humans with Cardiomyopathy

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Cardiomyopathy, which appears in about 1 in 500 adults, is a heart disease characterized by a complication in the rate of the heartbeat. This project develops a novel method to treat Cardiomyopathy by utilizing mechanically simulated kangaroo care (KC) for mice carrying a remutation of the Ppp1r13l gene as a model for humans with Cardiomyopathy. Finding an affordable alternative to Cardiomyopathy would help doctors by providing a natural, at-home treatment that can be easily and cost-effectively used by patients in complement or as a substitute to their current treatments. In this research, three groups of five mice were randomly assigned to a treatment group of 0, 1, or 2 hours of KC. The mice were tested for levels of mobility, heart rate, temperature, body weight, and scored based on the body condition scoring technique. A machine learning algorithm was engineered to discriminate between healthy and unhealthy heart rates for more advanced cardiac analysis. After 21 days, the health of the mice with KC generally improved; however, a closer cardiac analysis revealed that heart rates were categorized as healthy at improved rates for the first 10 days, but as the mice got older, this positive effect stagnated. Based on these results, this project suggests that KC was able to promote healthier heart rates in the neonatal stage. It is inferred that these temporary positive impacts were observed as a result of the calming effect of KC that helps with cardiac excitation-contraction coupling and only lasts through the high cardiac plasticity stage.

**Awards Won:**
Fourth Award of $500