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## THE ZEBRAFISH ENVIRONMENTAL CHALLENGES AND OPTIMIZATION

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# The Zebrafish Environmental Challenges and Optimization

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## ABSTRACT

The zebrafish housing is most important prerequisite to establish zebrafish modeling system in biomedical Research. Our laboratory is developing novel transparent transgenic zebrafish modeling system in Experimental Therapeutics, High Throughput Drug Discovery, Toxicology, Glioblastoma, diabetes, and cardio-oncology. Environment changes and temperature variation are most critical risk factors impending zebrafish housing. The aims of this study are to determine and maintain optimal zebrafish housing conditions. Because they are naturally from tropical environments, temperatures and other factors outside their normal range will significantly impact their development and behavior. We are conducting the study on weather temperature fluctuation, room temperature, system water temperature, system water pH, and system water conductivity of our zebrafish facility. These parameters are observing and recording over the course of a year. Weather (or campus) temperature is recorded via the weather app, and room temperature is measured using a thermometer kept in the fish lab. System water temperature, pH, and conductivity is measured and recorded using the recirculating system monitor device that is connected to the system water. pH of the system water is maintained using sodium bicarbonate while the conductivity is maintained using salts. The aims of this study are to determine and maintain optimal zebrafish housing conditions. Our observations established the lethal role of extreme low temperature on the zebrafish fertilization, development, and growth. Our method involves simulating a zebrafish's natural tropical habitat intact and optimization of environmental condition to keep the zebrafish housing in best conducive environment.

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