



STIMULATION AND REAL-TIME MONITORING FOR CELL CULTURE

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Background

Concurrent electrical stimulation and monitoring of the function and structure of developing *in vitro* cell culture remains a relatively uncharted area and a highly challenging field of research. Electrical stimulation mimics the native physiological conditions and support tissue maturation, while non-destructive real-time monitoring allows continuous and immediate optimization of the culture protocol to the actual needs of the construct itself.

Objectives

The aim of this work is the development of a system able to provide electrical stimulation and real time monitoring for *in vitro* cell culture.

Methodologies

A device able to provide tuneable electrical stimulation in cell culture will be developed. Sensors for real-time monitoring will be designed and developed by printed electronics technologies. Finally, the two issues will be integrated in a single system able to provide both electrical stimulation and real-time monitoring.

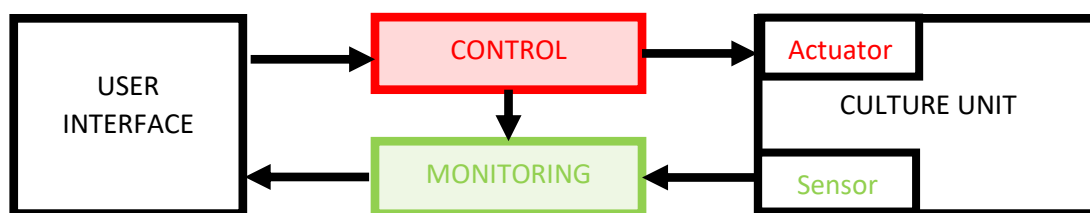


FIGURE 1. SCHEMATIC ILLUSTRATION OF CONTROL AND MONITOR SYSTEM.

Expected Results and Impact

After the preliminary in-house test, the system will be tested to evaluate the electrical stimulation and real-time monitoring on cell culture. The device will improve the understanding of the physiological response of living cells grown in culture under the influence of such fields.