

Title of Project

Real-Time monitoring of cell proliferation

Primary contact for the team

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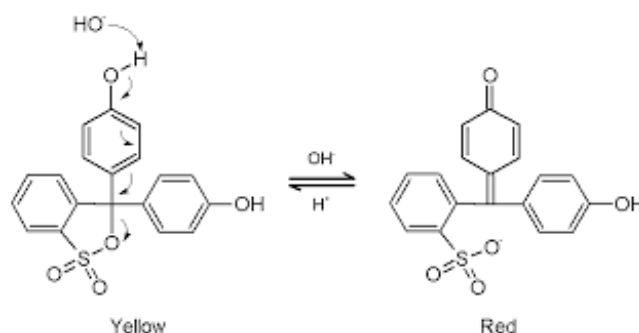
Team

Roberto Canales
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Roberto is an engineer and his expertise in sensors and hardware will be vital for this project.

Summary

Human [cells](#) are grown in [tissue culture](#) for a variety of applications. The process of growing cells is quite tedious and requires checking the cells every day under the microscope to monitor the growth and any possible microbiological contamination. The cells are maintained in a medium close to physiological pH and a small amount of phenol red is added as an indicator. Waste products produced by the cells will slowly decrease the pH of the medium turning the solution orange and then yellow. Medium should be change before it turns into yellow colour as this is indicative of overgrowth. Also, some micro-organisms such as bacteria or yeast, can contaminate the culture and cause a change in pH, leading to a rapid change in colour from red to yellow. This change in colour implies a change in absorbance from 570nm (red) to 443nm (yellow) that could be exploited as a surrogate for cell growth.



Proposal

We propose to develop an absorbance sensor that could be used inside the incubator for real-time monitoring of the culture medium pH change. Also the system will send an email to the user when the cells are ready to be expanded or if they got contaminated

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Components and budget

Cells

Medium

Sensor

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