

Cell Stiffness as a Tool to Distinguish Cancerous Cells from Healthy Cells

Katrina Keller, Department of Bioengineering

Co-Advisers: Rashid Bashir, Department of Electrical and Computer Engineering, and Bioengineering
Supriya Prasanth, Department of Cell and Developmental Biology

Objective

This project will focus on characterizing the stiffness of different kinds of cells, with a focus on cancerous cells compared to their non-cancerous analogs using a MEMS platform.

Research Highlights

- Build the sensors
- Characterize different stiffness measurements for different cell types
- Compare cells of specific organs to cancer cells in those organs

Future Research

- This project will eventually encompass the capture of circulating tumor cells (CTCs) from whole blood samples with the MEMS platform and subsequent measurement of stiffness and growth.
- This technology will be a powerful diagnostic tool to determine if CTCs are present and where they originated.

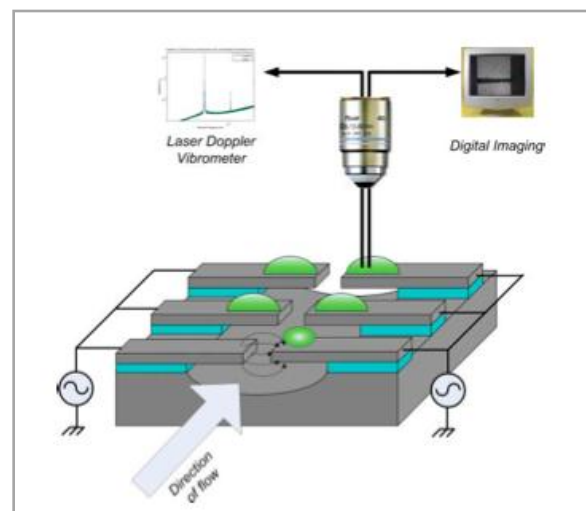


Fig. 1 Diagram of a living cantilever array. Cells are captured from suspension and immobilized on the cantilever. The mass of the cell is then measured using the resonance frequency shift of the cantilever.

K. Park, et al, Lab Chip, 2008