

Nanophotonic Sensor Integrated Microfluidic Imaging Platform for Studying Cancer Cell Mechanobiology in Metastasis

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Objective

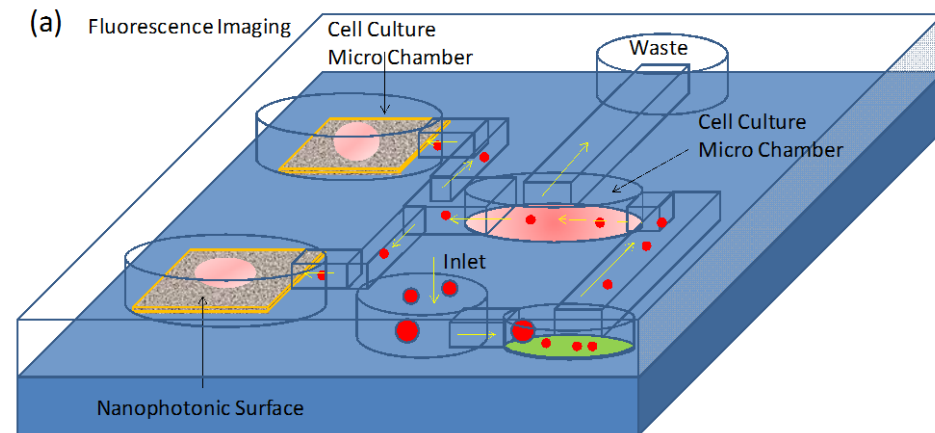
The mechanical properties of cancer cell are known to be critical in metastasis process, however the molecular level mechano-biology mechanisms of cancer metastasis are to be further discovered. We are creating an ex-vivo nanotechnology platform able to simulate the physiological environment for cancer cell growth and development and image molecular and cellular responses and investigate various mechano-biological aspects in cancer metastasis with high efficiency.

Research Highlights

- Fabrication of Microfluidic platform for metastatic breast cancer cell culture and observation
- Fabrication of patterned nanophotonic substrates for integration with the microfluidic platform
- Preliminary 3D confocal images of GFP transfected metastatic breast cancer cells
- Fabrication of New colormetric nanopore sensor for cell attachment and imaging

Future Research

- Integration of nanophotonic substrates with microfluidic platform
- Imaging of cancerous cell attachment on the colormetric nanopore sensor



A schematic of an integrated nanoplasmic imaging platform with microfluidic cell culturing chamber.