



# Personalized Cancer Therapy and Disease Monitoring

## Microfiltration for Circulating Tumor Cells



# Needs

- **> 10 million cancer patients in the US**
  - 1.5 million new cases each year
  - Metastasis causes 90% of cancer deaths
- **Tissue biopsy to determine treatment**
  - Risky, costly
  - To determine changes in the tumor, new biopsy
- **MRI and CT for disease monitoring**
  - Expensive
  - Time lag

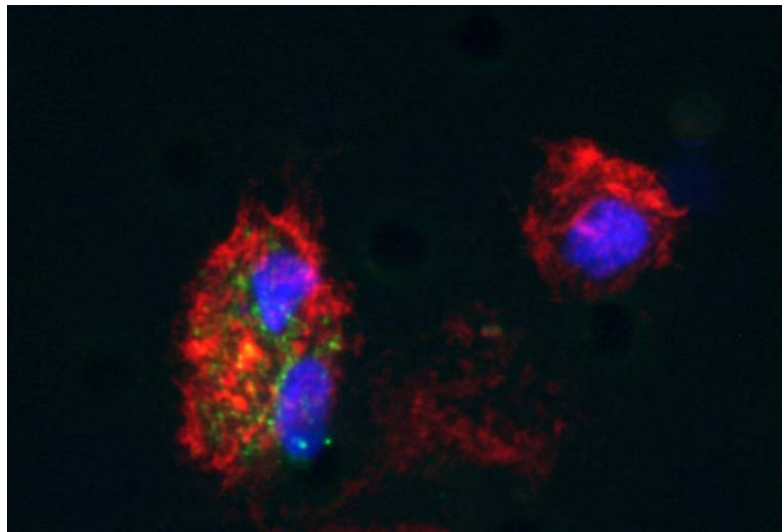
# Opportunity: Circulating Tumor Cells (CTCs)

- **CTCs: metastatic cells in the blood stream**
  - As few as one or two among one billion blood cells
  - Larger than blood cells
  - Carcinomas ~ 80% of cancers
  - The major cancers: breast, prostate, colon, lung

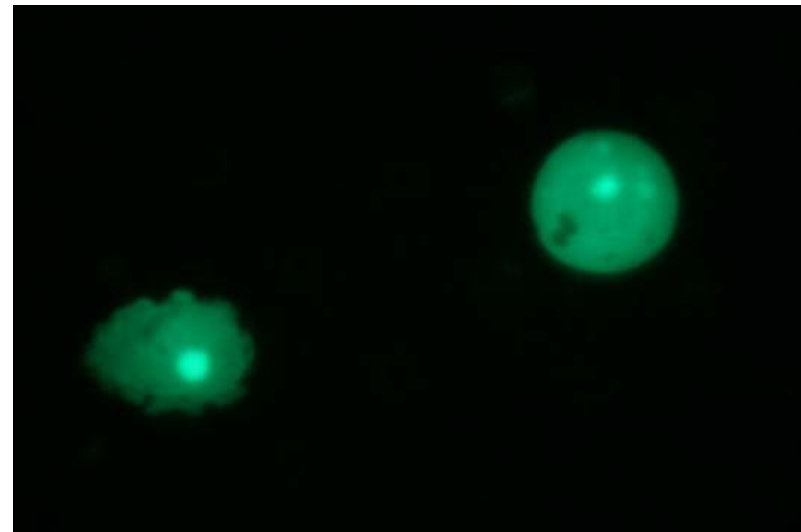
# Market Opportunity

- **“Liquid biopsy” providing personalized therapy**
  - Less invasive than tissue biopsy
  - Diagnostic methods:
    - Expressions of cell surface biomarkers
    - Chromosome copy number
    - Gene mutation
    - mRNA expression
  
- **Monitor treatment response, relapse**
  - less expensive, more timely than MRI or CT
  - Diagnostic method: changes in CTC count

# Microscope Images of Tumor Cell Captured on Microfilter



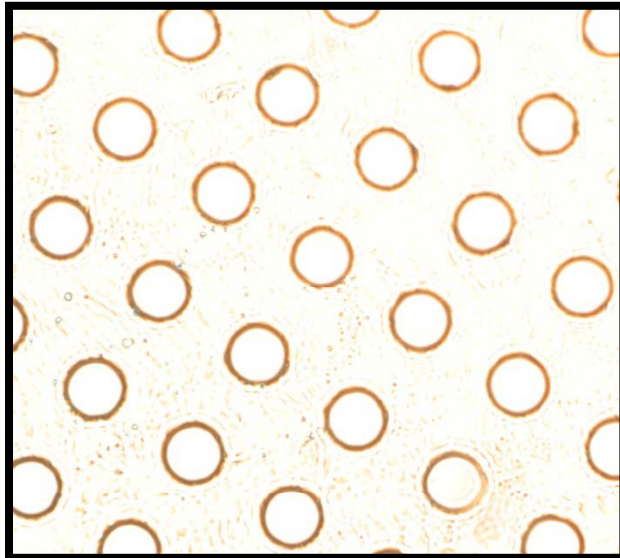
**Fluorescently stained cancer  
cells**



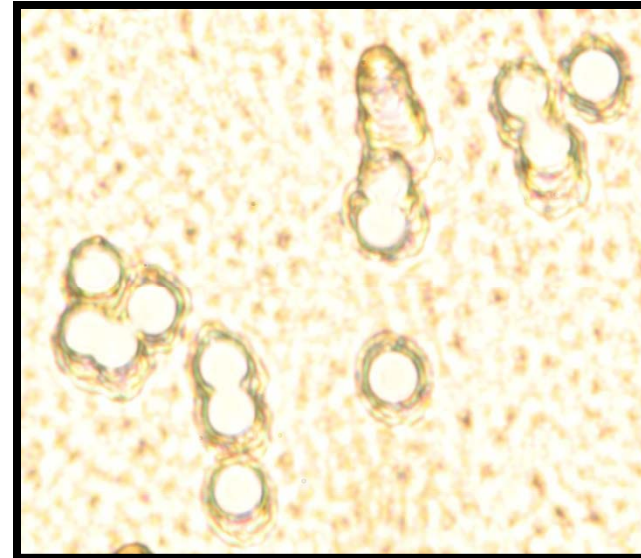
**GFP expressing MCF-7 cells**

# Comparison of Microfilters

**Creatv's filter**



**Track etch filter**



# Microfiltration Capture Efficiency

## ■ Cell Lines

- ~ 97% for fixed MCF-7 cells
- ~ 90% for live MCF-7 cells

## ■ Patient sample example

- 147 CTCs by microfiltration versus
- 1 by CellSearch<sup>®</sup>

# Strategic Partners Sought

- **Pharma:** Companion diagnostic for indicated therapies, disease monitoring
- **Medical Device:** Personalized therapy, novel assays, automation, image analysis
- **International distribution**
- **Non-cancer applications**