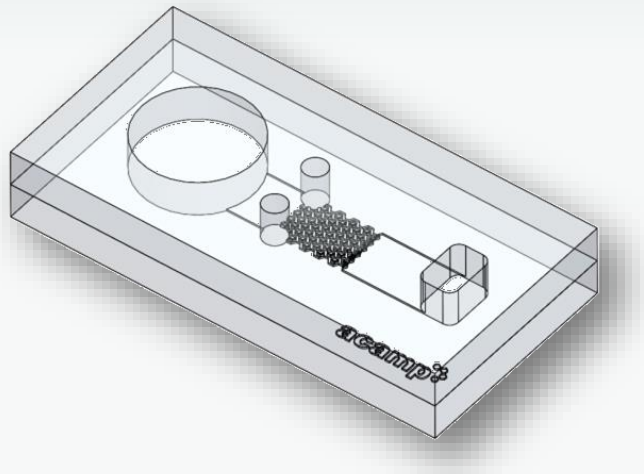
ACAMP Microfluidics Challenge



December 5, 2013

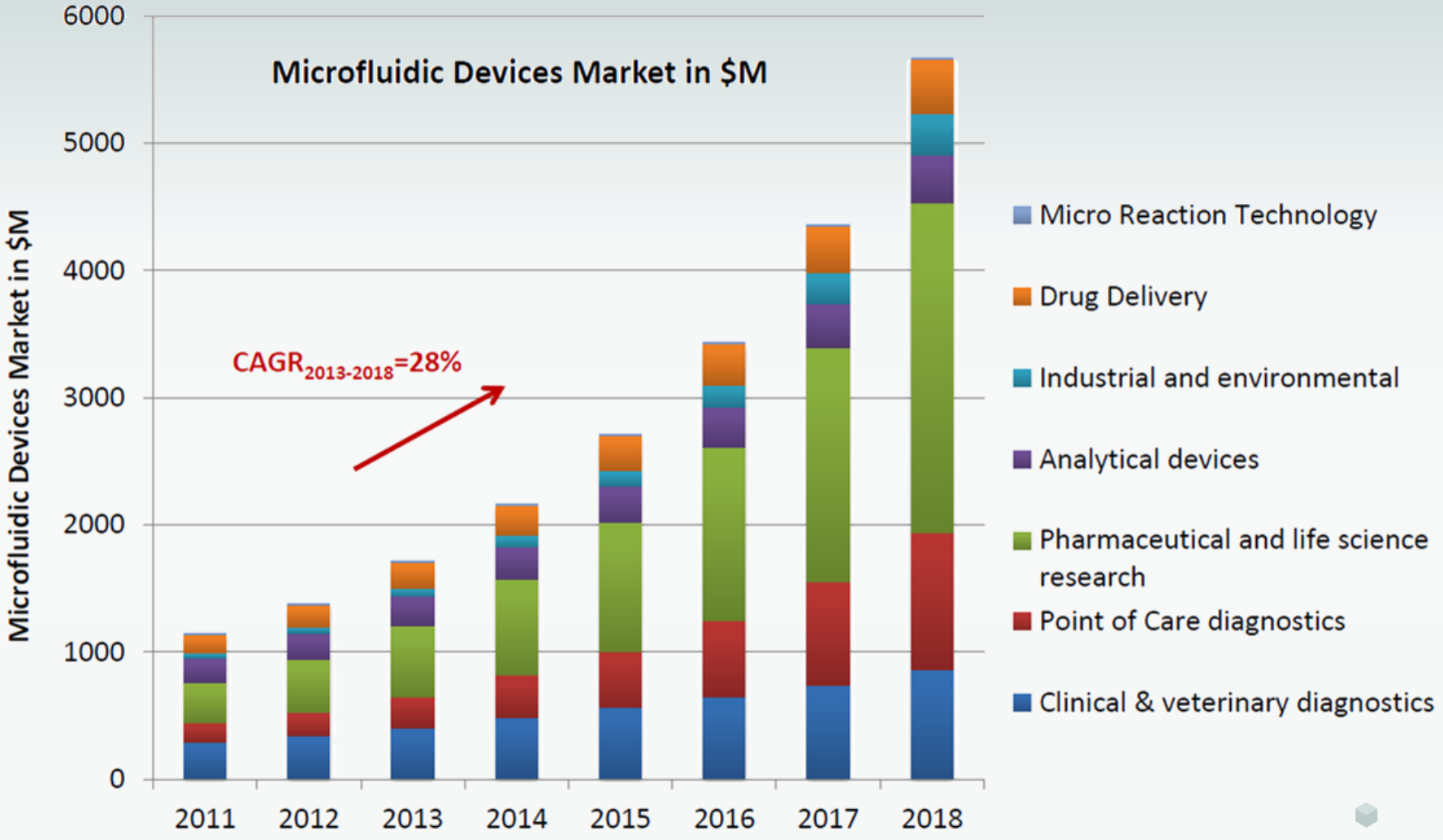
Health & Medical Seminar

Outline

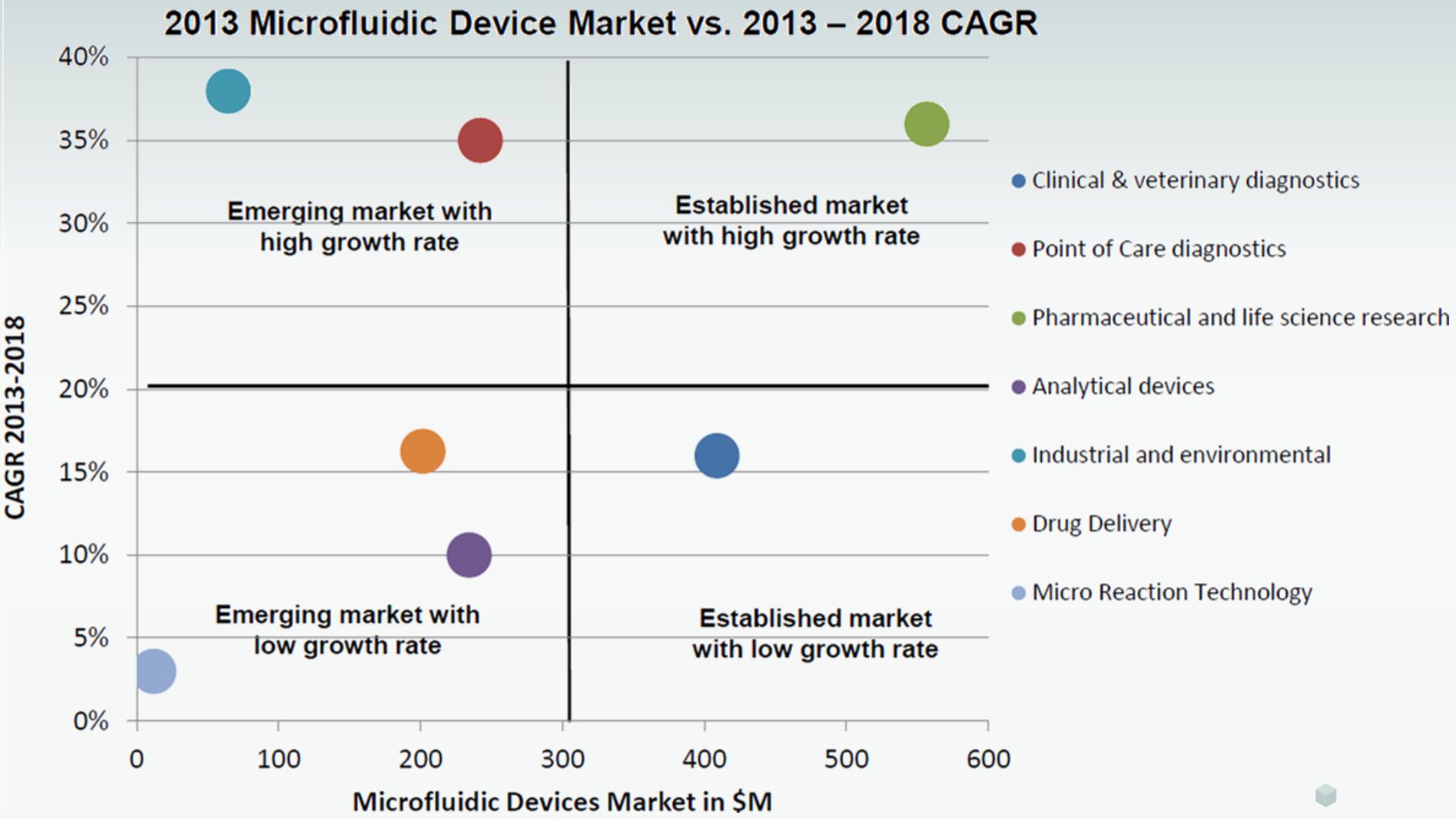
1. Market Opportunities
2. ACAMP Microfluidic Toolbox
3. Challenge Format & Timeline

MICROFLUIDICS MARKET OPPORTUNITIES

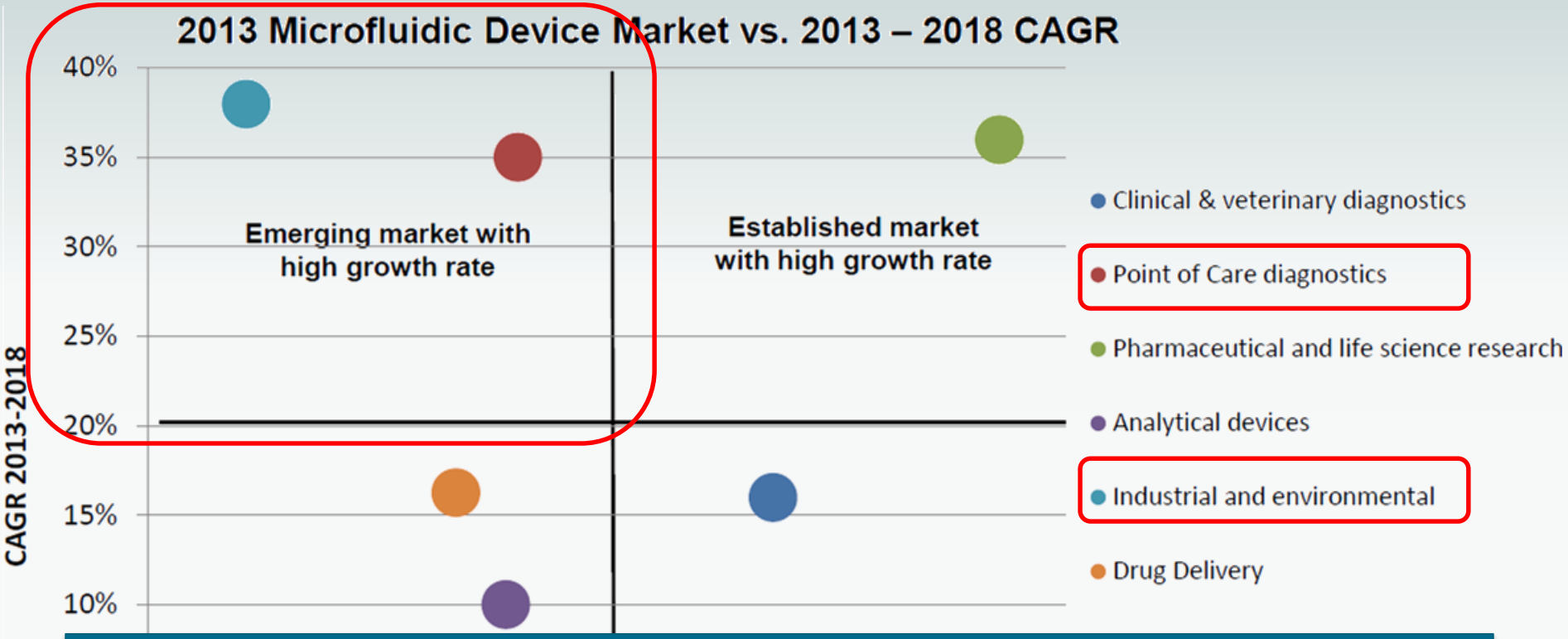
Microfluidics Market



Market Growth



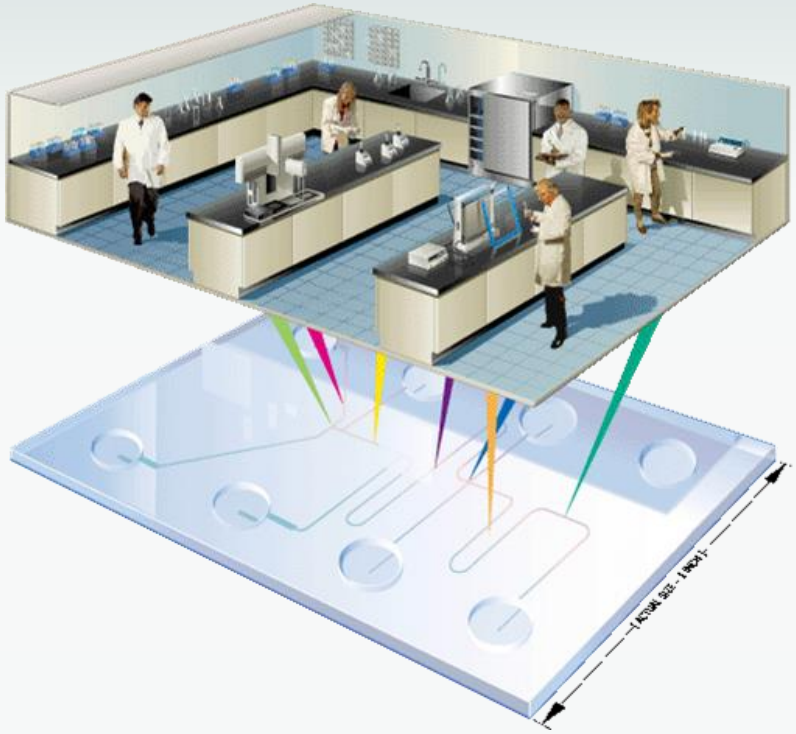
Market Growth



Yole Développement:

"Pharmaceutical research, industrial & environmental testing, and point-of-care diagnostics are the most promising application fields for microfluidic devices."

Research to Product

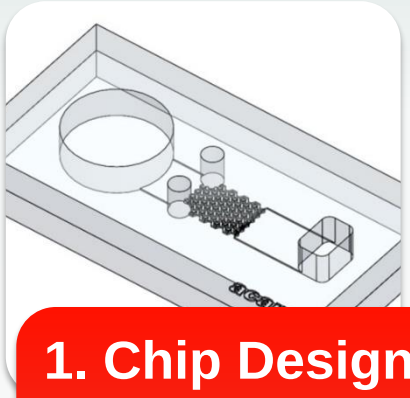


- Would you like to transfer your lab process or company project into a prototype chip?

acamp
ALBERTA CENTRE FOR ADVANCED MNT PRODUCTS

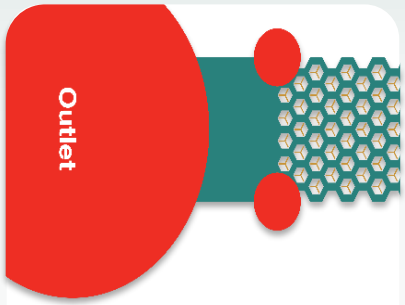
THE ACAMP MICROFLUIDICS TOOLBOX

Build your Own Chip



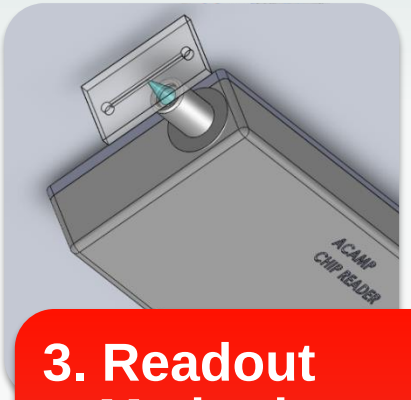
1. Chip Design

- Capillary Pump
- Micromixer



2. Chip Features

- Functionalized Elements
- Wells
- Electrodes

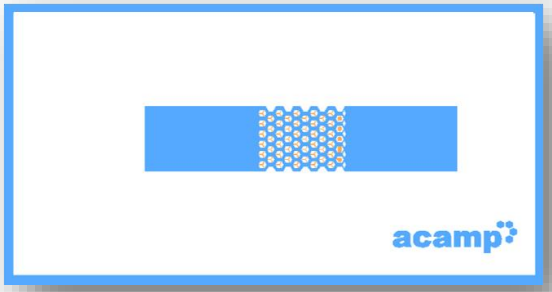


3. Readout Method

- Optical
- Electrical

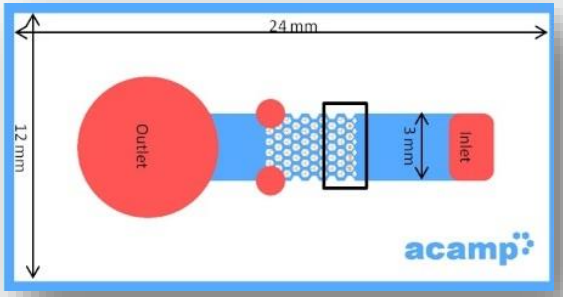
Lateral Flow Assay Demo

1. Chip Template



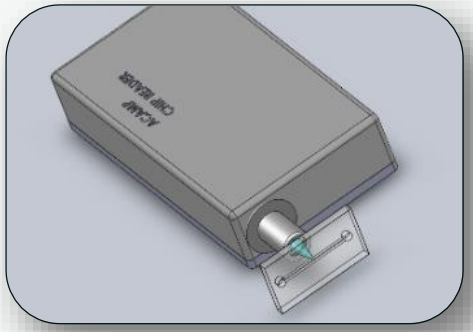
Capillary Pump

2. Chip Features



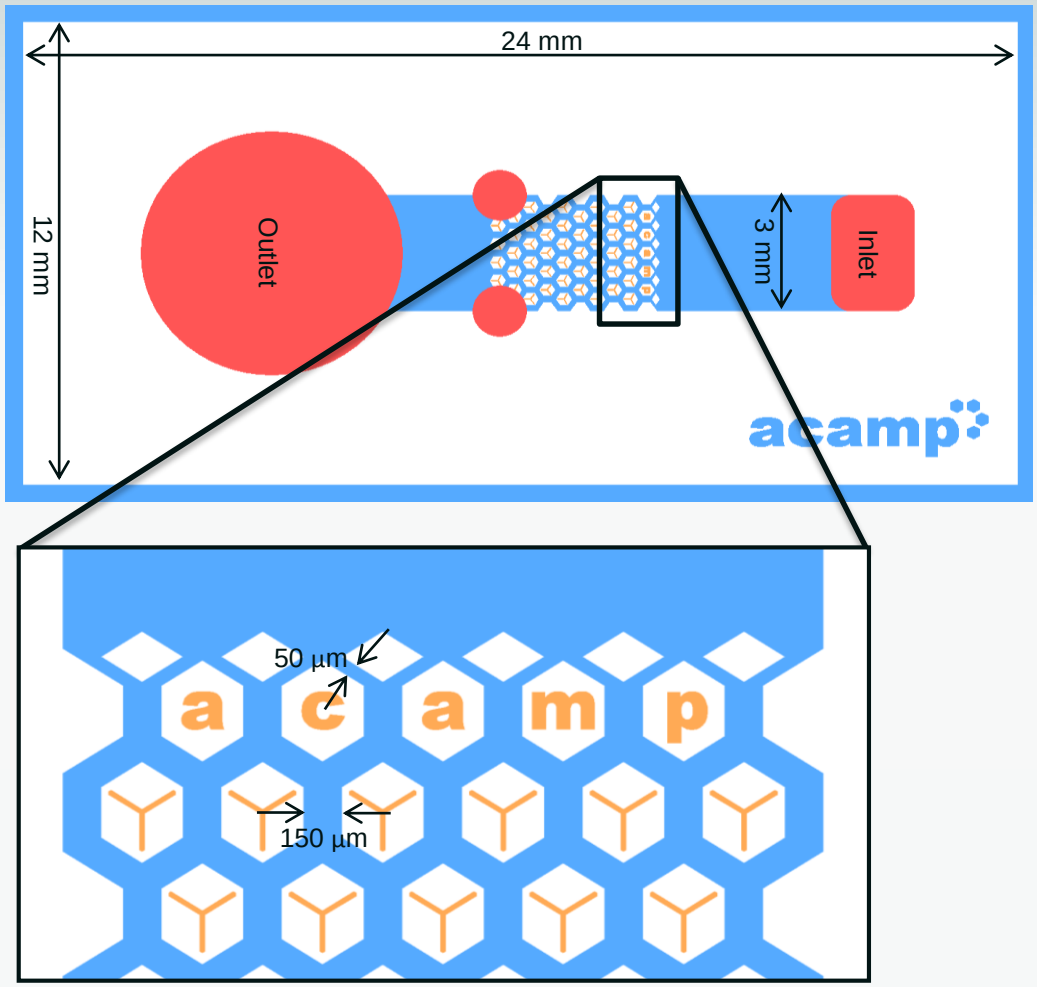
Wells
for Inlet & Outlet

3. Testing Method



Confocal Optical
Reader

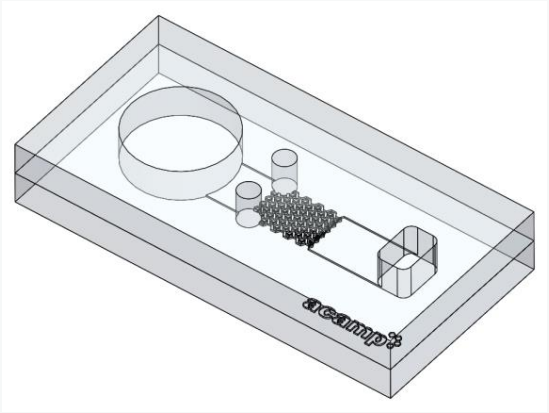
Lateral Flow Assay Chip

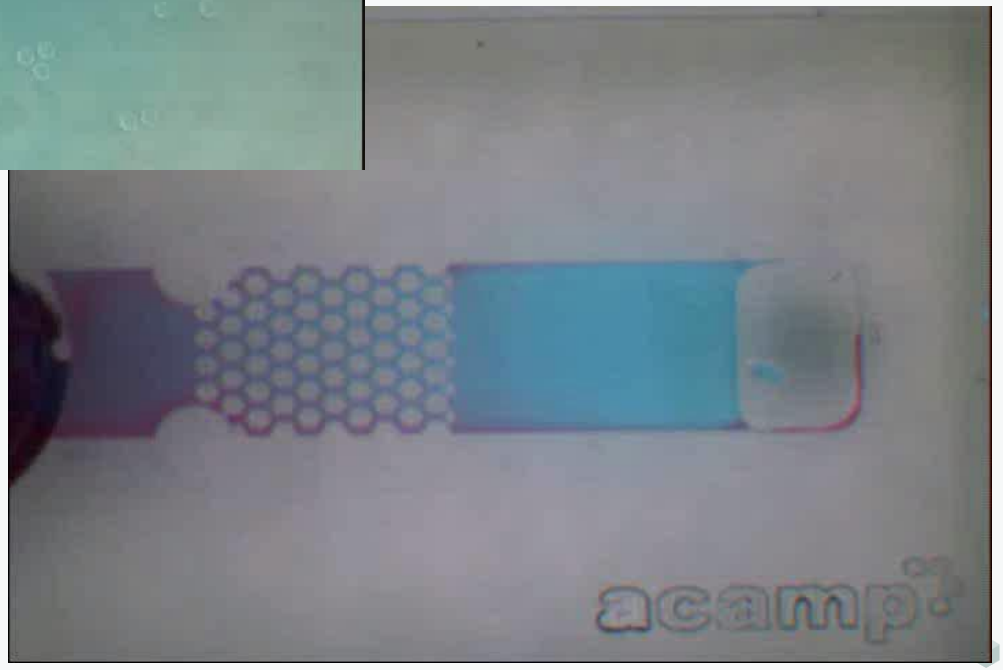


- Filter driven by capillary pump for lateral flow assays such as cytometry
- Chip can be used with fluoresecent antibody coupling beads or cells

Lateral Flow Assay Chip

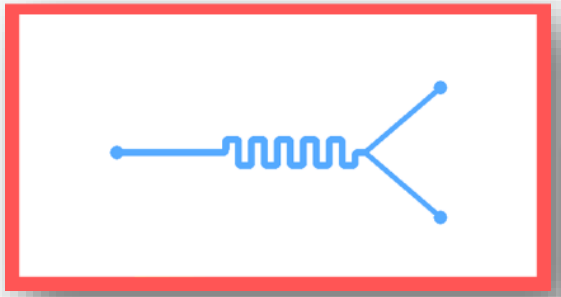
Capturing 90 µm beads and replacing the surrounding fluid





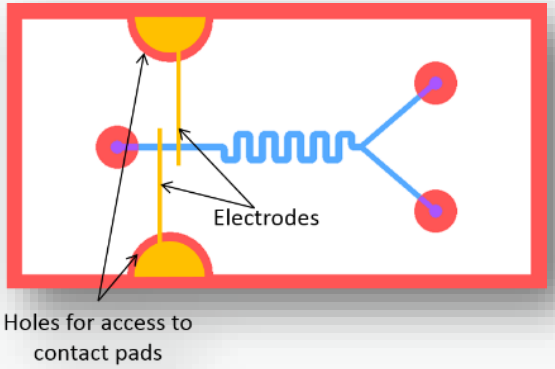
Water Testing Chip Demo

1. Chip Template



Micromixer

2. Chip Features



Wells
for Inlet / Outlet
&
Readout Electrodes

3. Testing Method

Electrical Test Equipment

Challenge Format

- Eligibility: Canadian companies, researchers, and start-up teams
- Proposal Outline (2 pages):
  - Market Opportunity
  - Description of assay or test
  - Chip design
  - Team members and brief backgrounds
- Prize: $2,500 ACAMP in-kind for product development or business development (excl. 3rd party costs and consumables)
- Deadline: Submissions are accepted any time until the final deadline on 30 April 2014

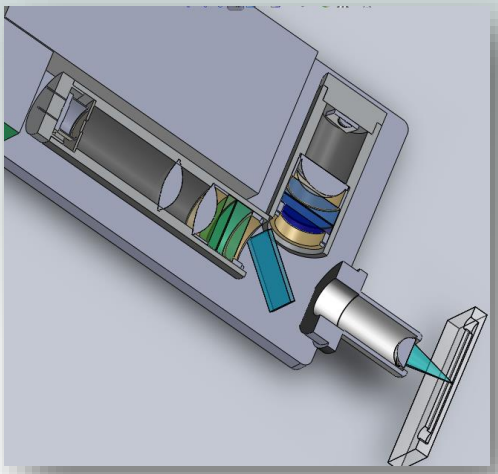
acamp
ALBERTA CENTRE FOR ADVANCED MNT PRODUCTS

CURRENT DEVELOPMENTS AT ACAMP

Portable Confocal Reader

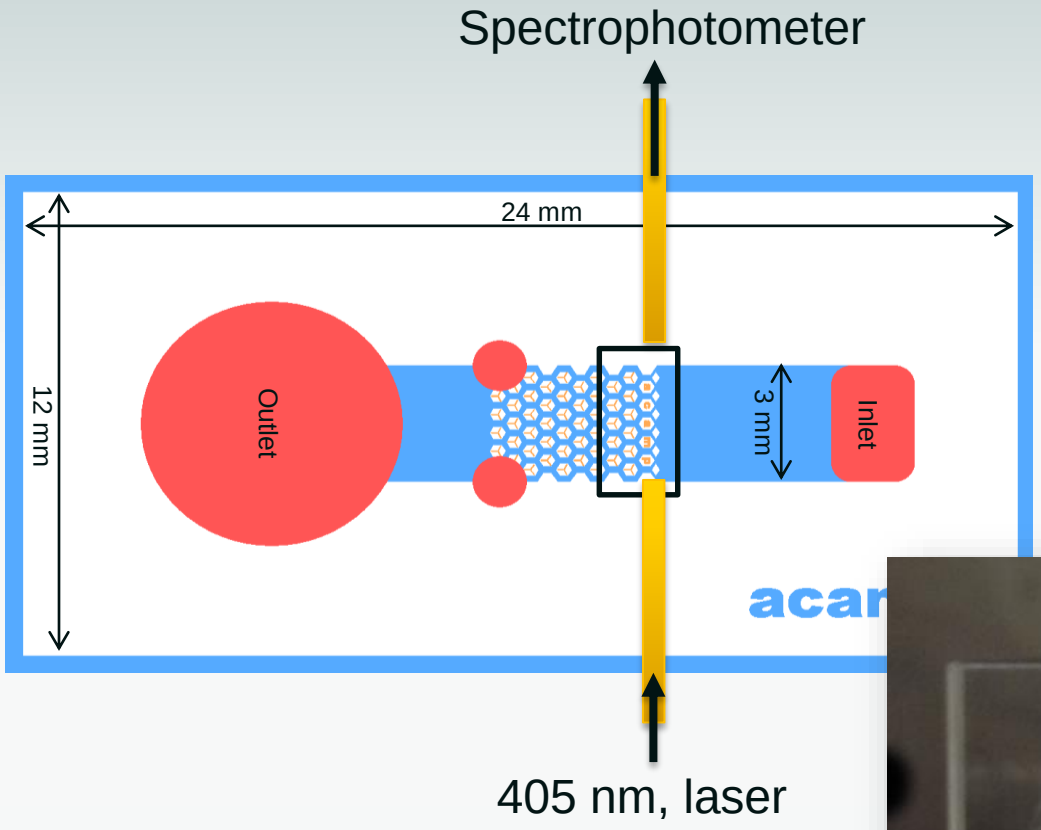
- Low power consumption
- Confocal
- Flexible spectral bands (UV, blue, …)
- Light weight – close to cell phone weight
- USB connectivity

Portable Reader Design

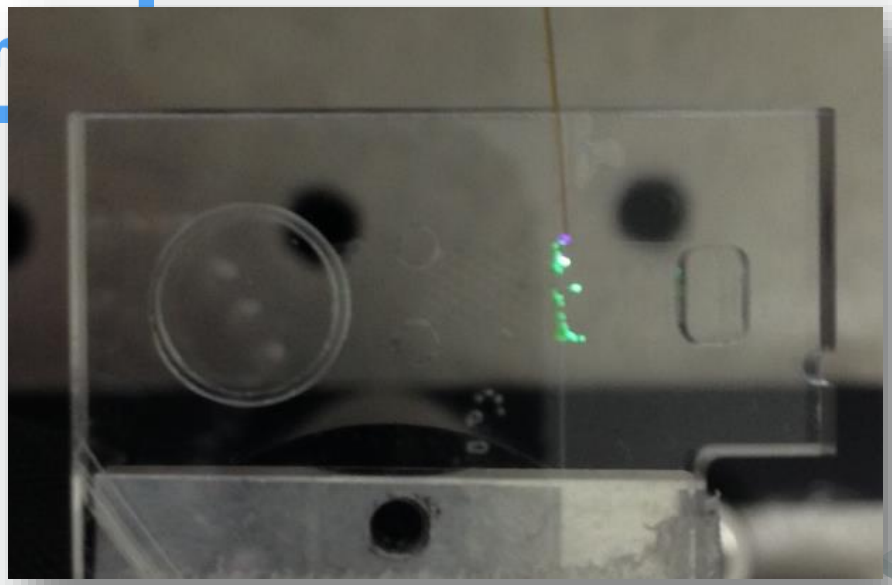


Prototype Reader

Optofluidic Chips



- Optical fiber coupling for better cell / bead detection in lateral assays



THANK YOU

LEARN MORE AT OUR DEMO BOOTH

Acknowledgments:

Viet Hoang, P. Eng. – Chip Design and Fabrication

William Cully – Chip Design and Fabrication

Dr. Manisha Gupta – Optofluidic Chip Design and Testing

Mara Cairo – Optofluidic Chip Fabrication and Testing

Murray Paulson, P. Eng. – Optical Reader Design and Fabrication

Dr. Jeff Shakespeare – Optical Reader Design