



## **Fully Automated Sorting & Microinjection System for *Xenopus laevis* Oocytes**

**Micro and nano-manufacturing,  
Market opportunities and new technologies for industries**

Torino, Italy

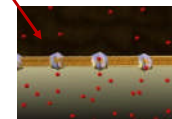
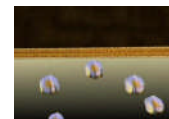
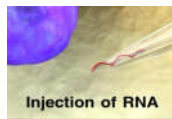
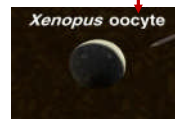
April 8, 2010

## Why Microinjection of Oocytes?



*Xenopus laevis* oocytes are a standard in biology and are used as a functional expression system

Microinjection



Expose cell to active compound and measure effect on ion channels

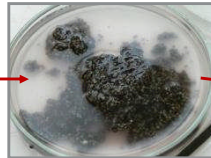
used in  
**Pharmaceutical research**

## Today: Manual Microinjection

**Manual** microinjection into *Xenopus laevis* oocytes

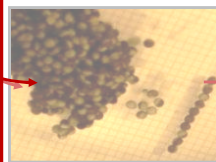
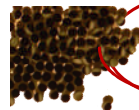


Oocyte extraction

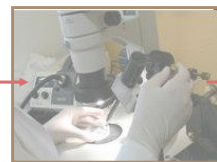


Defolliculation

**Automated System**



Sorting &  
Immobilization



Injection



Collection



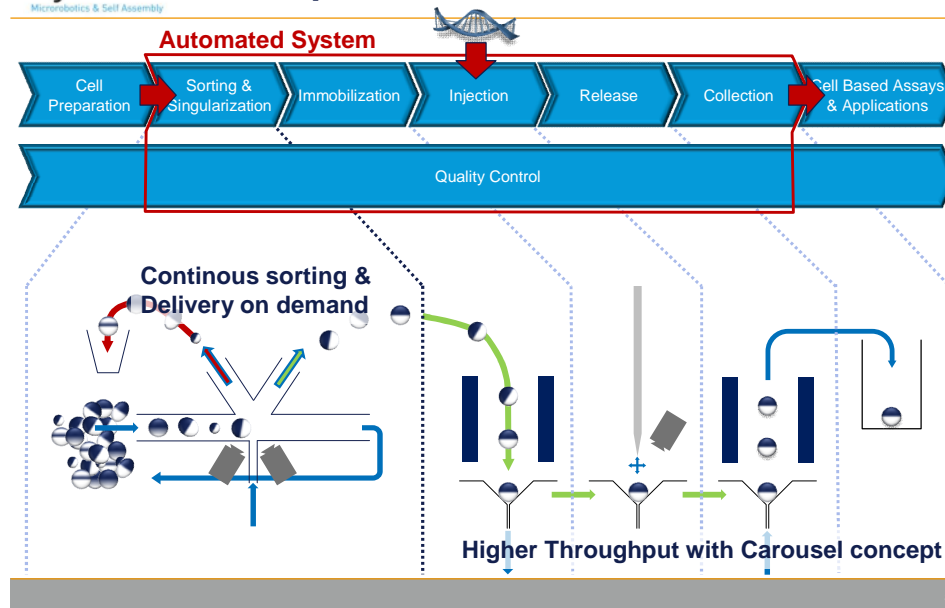


## Performance Defined for Automated System

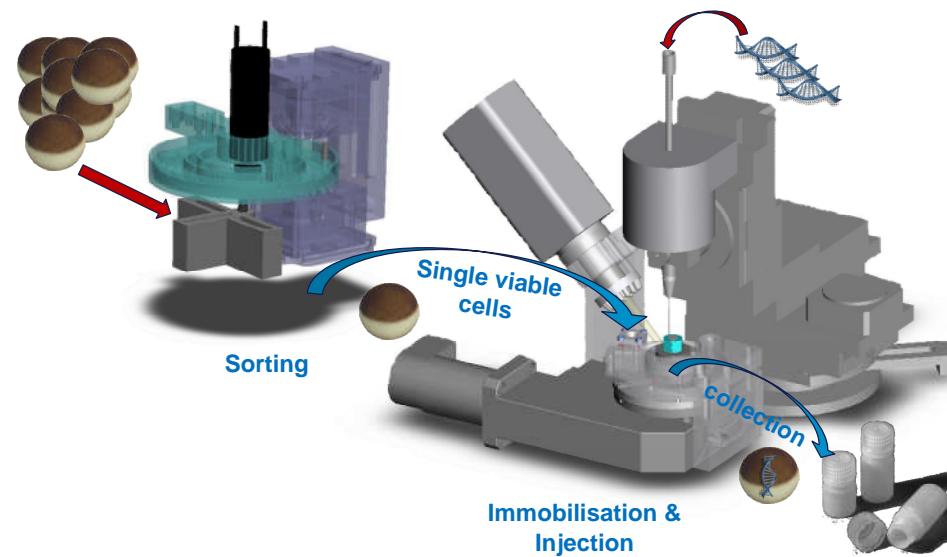
	Manual	Automated
Throughput	<600 per 8h	>7'000 per 8h
Injection Efficiency	Poor	High
Operator	Highly skilled	Trained
Injection site	Only cytoplasm	Cytoplasm and nucleus*
Individual operations	Many	Cell suspension in, Injection material in, collected injected cells out

\* For *Xenopus laevis* stage V oocytes

## Concept for Automation

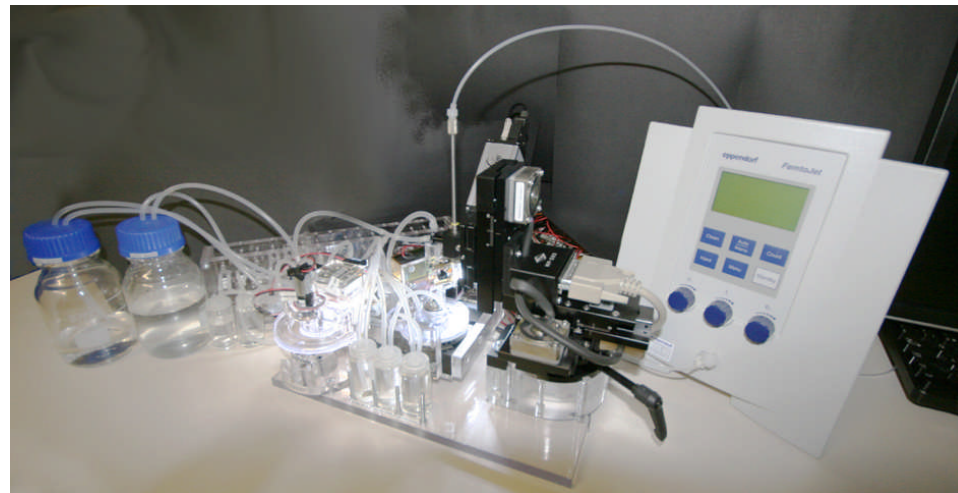


## System Design





## System in Action





## Current Status

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System is currently being validated by biologists

Sorting unit also used as a stand alone module for sorting of other large entities





**Thank you for your attention!**

