High Content Analysis. Precisely.

CYTOO Cell Architects: Our company

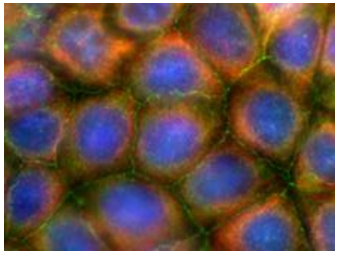
- Mission: « ***CYTOO focuses on innovative products for the life science research and Drug Discovery markets with an emphasis in cell based assays, high content analysis and cell screening.*** »
- Founded in June 2008

  18 employees in Grenoble, France
- US subsidiary (Boston, USA) founded August 2009: 4 employees
- Strong IP portfolio from Institut Curie, Harvard University and CEA
- 200 customers in over 100 institutes/companies
- Total raised: 4.2 M€ + 0.5 M€

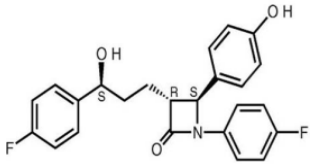
www.cytoo.com

High Content Screening: Markets & Needs

HCS: Workflow overview

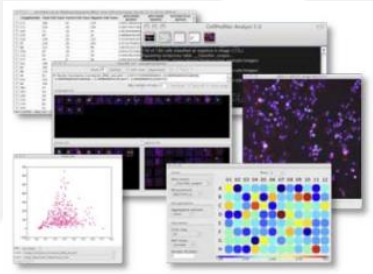


Cellular models



Stimuli

Image acquisition

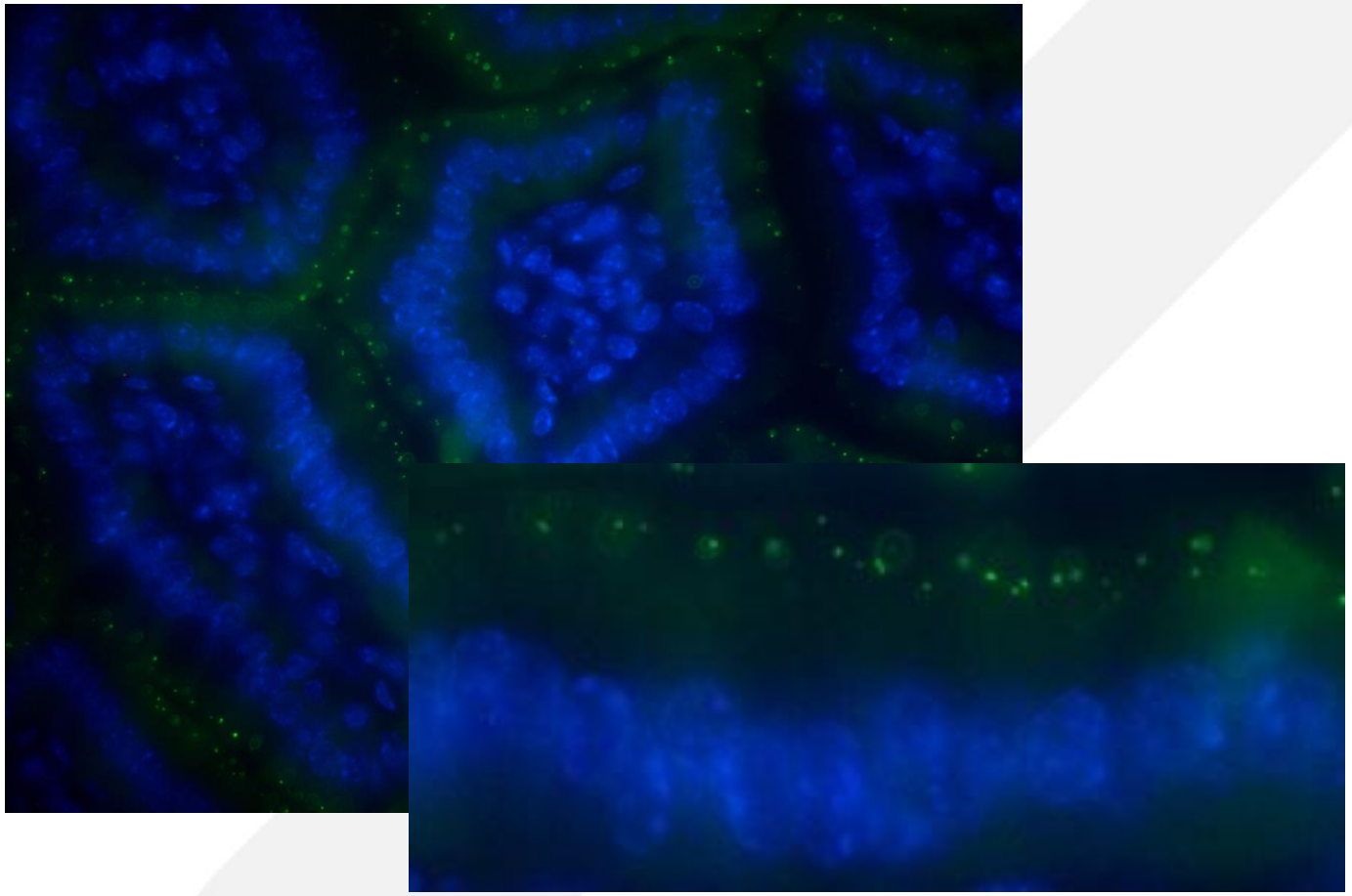


Analysis

Market	***Customers***	***Needs***
Applied Reseach in Drug development	*Pharmas Biotechs CRO*	*Reproductibility Robustness Sensitivity Relevance*
Fundamental research	Academic labs & *Screening platform*	

A standard situation: *in vivo*

Adherent cells in a tissue (here mouse intestine)



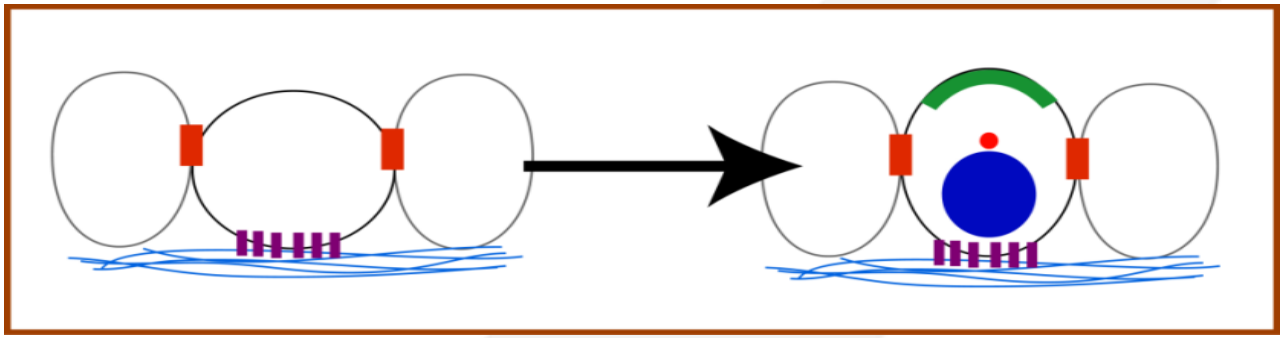
Centrosomes

Nuclei

Chantal Desdouets, INSERM U370

exhibit highly reproducible internal cell architecture and very little motion

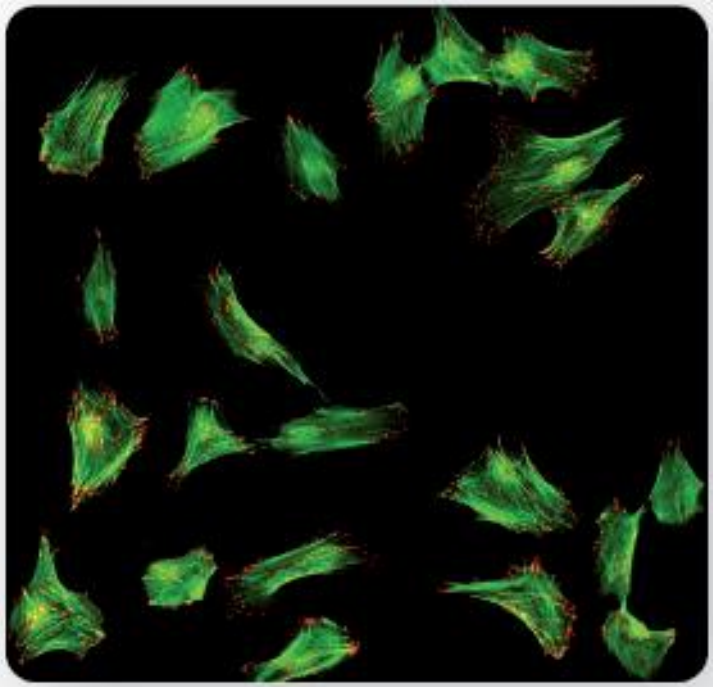
Spatial information : microenvironment & cell architecture



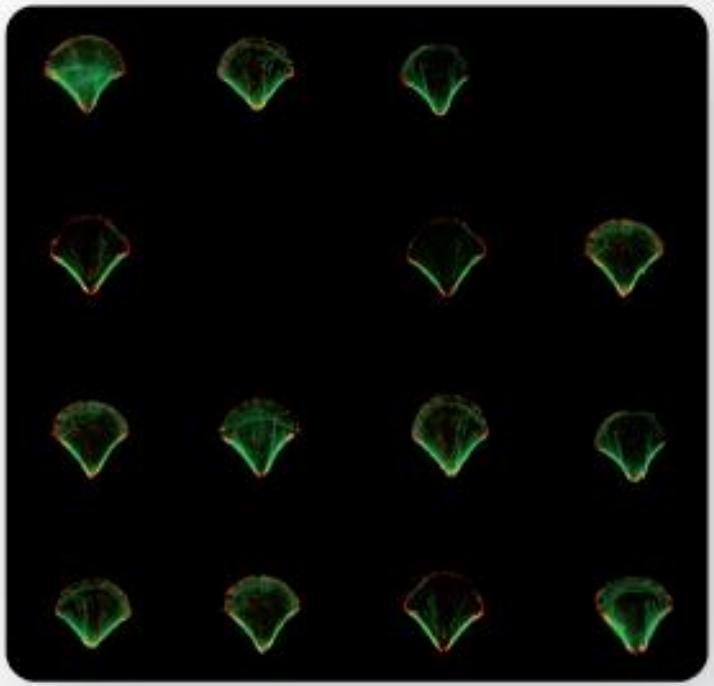
ECM as well as cell-cell contacts between non migrating cells in a tissue control individual cell polarity, organelle positioning, and provide cues that mediate the proper orientation of cell division

CYTOO
CELL ARCHITECTS

In vitro cell culture conditions: *Standard vs microppatterns*



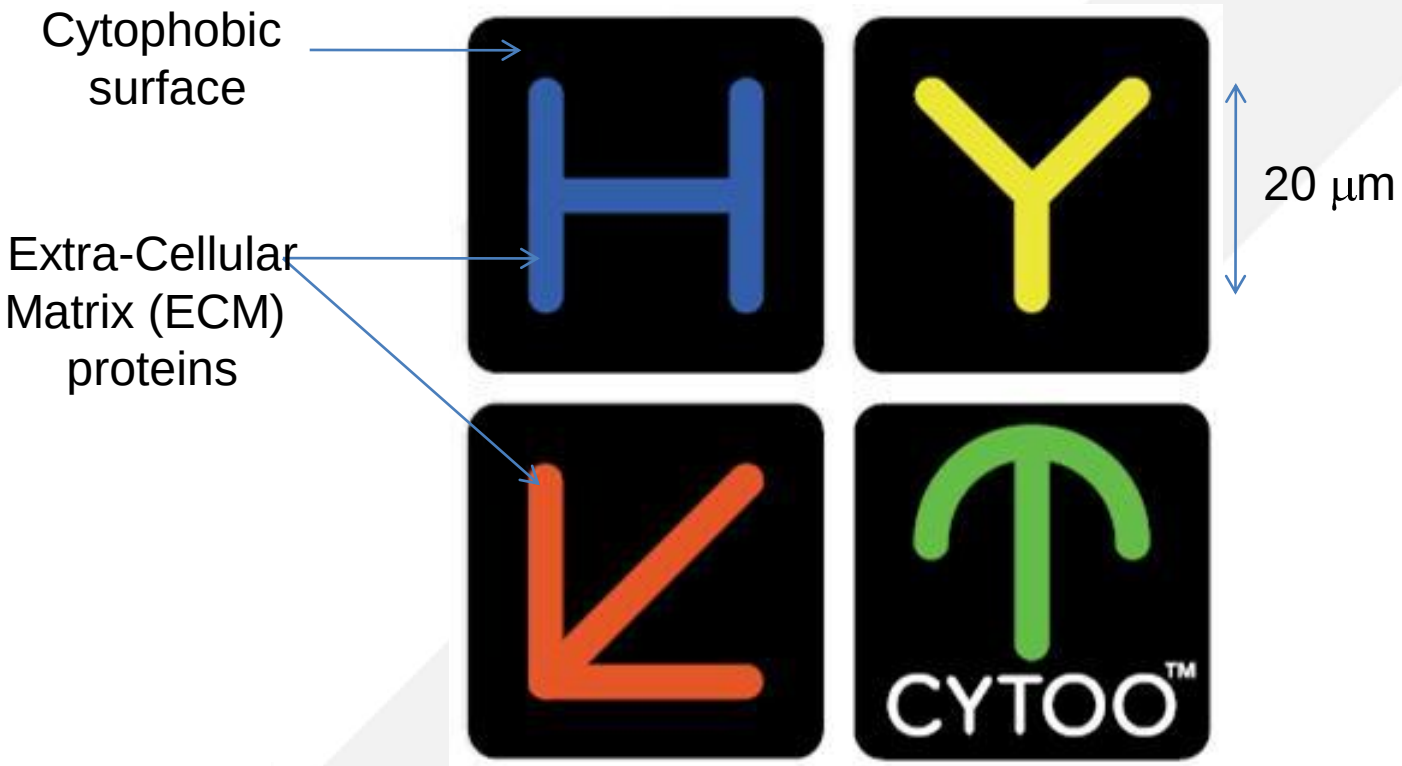
Cells in a standard culture dish



Cells cultured on CYTOO products

- Cell normalization
- Greater Sensitivity
- Powerful quantification
- Significant data with few cells

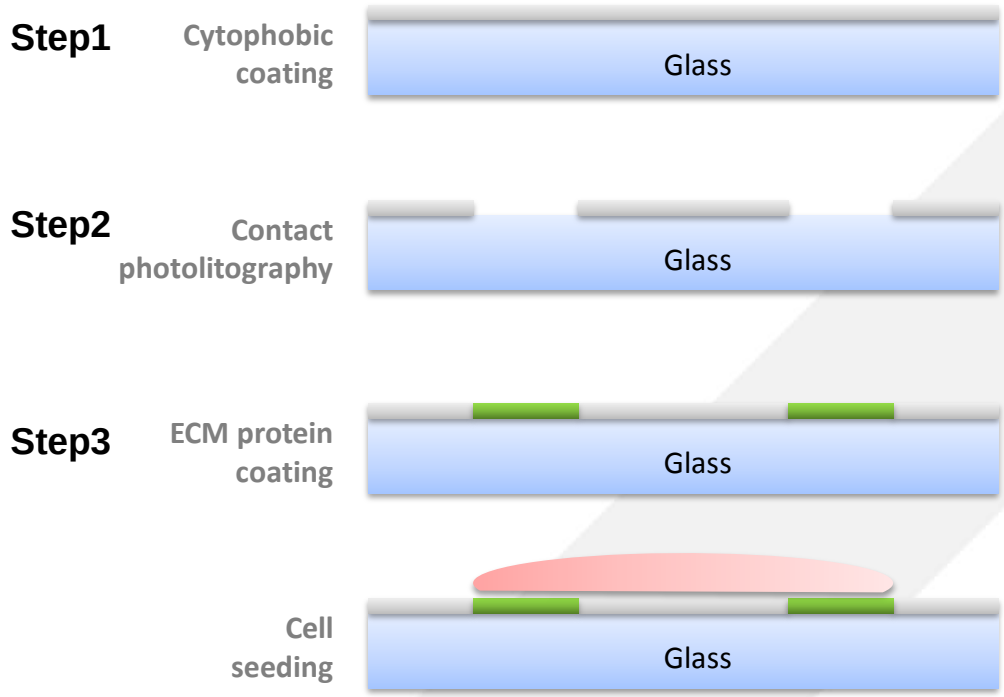
Micropatterns: A precise control of cell adhesion

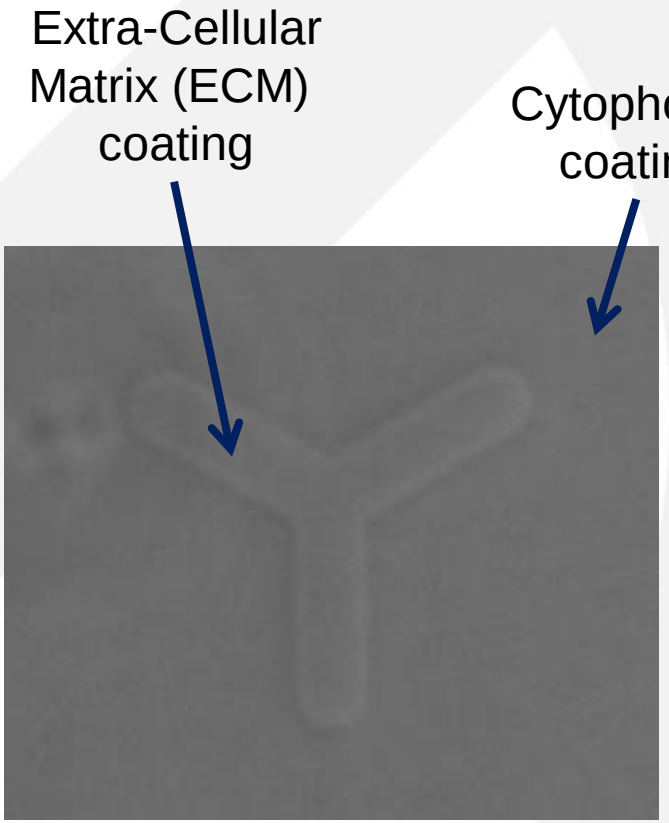


CYTOO's benefit: Restore spatial information to recover reproducible internal organizations and to allow relevant cell observations and measurements

Micropatterns production: Overview

TECHNOLOGY





Phase contrast

CYTOO's products: Cell culture support formats

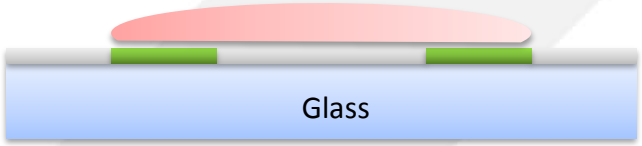
TECHNOLOGY

Step1 Cytophobic coating

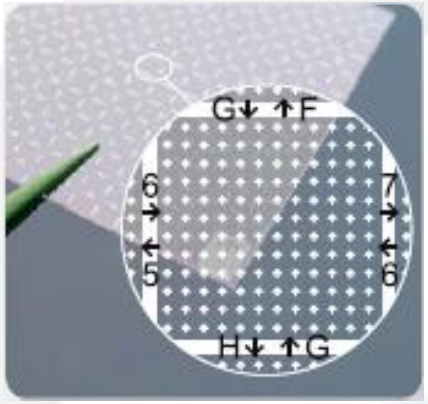
Step2 Contact photolitography

Step3 ECM protein coating

Cell seeding

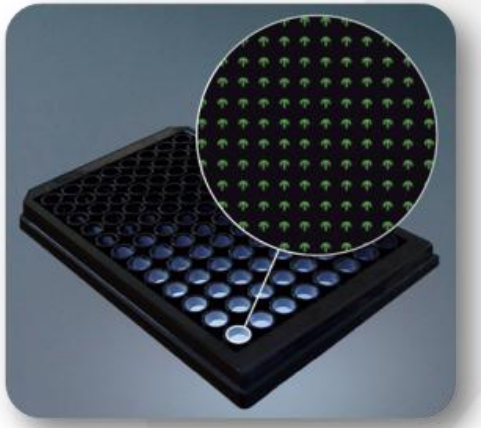


FORMATS



Chips (coverslips)

Microplates



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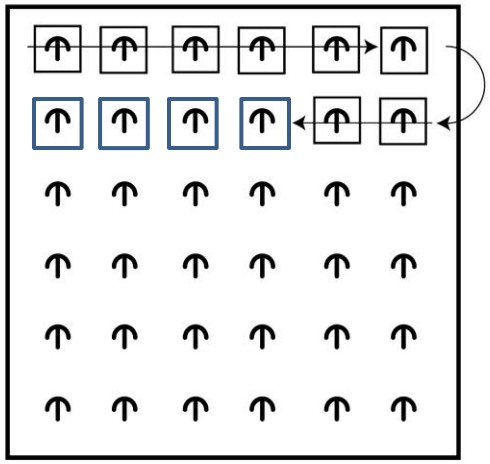
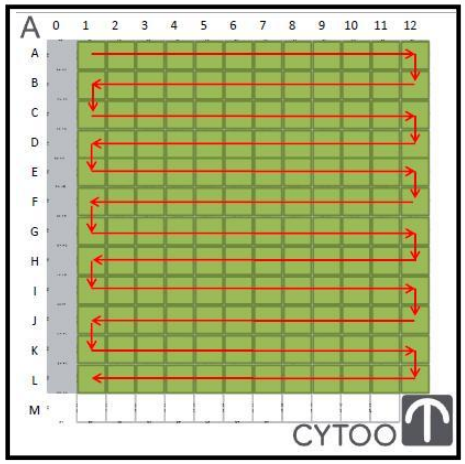
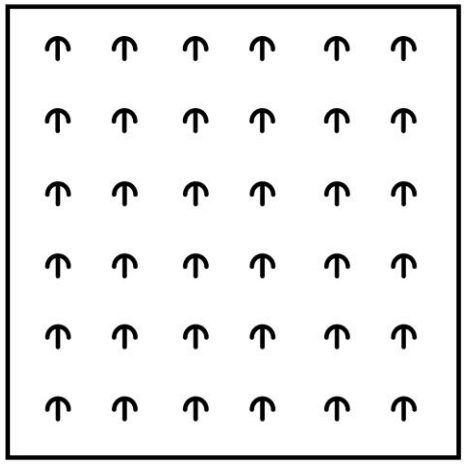
CELL ARCHITECTS

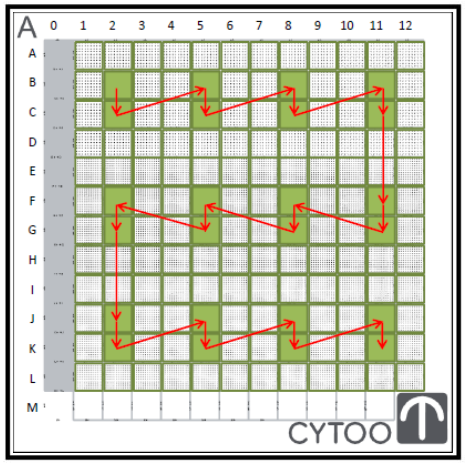
Automated acquisition of individual cell pictures

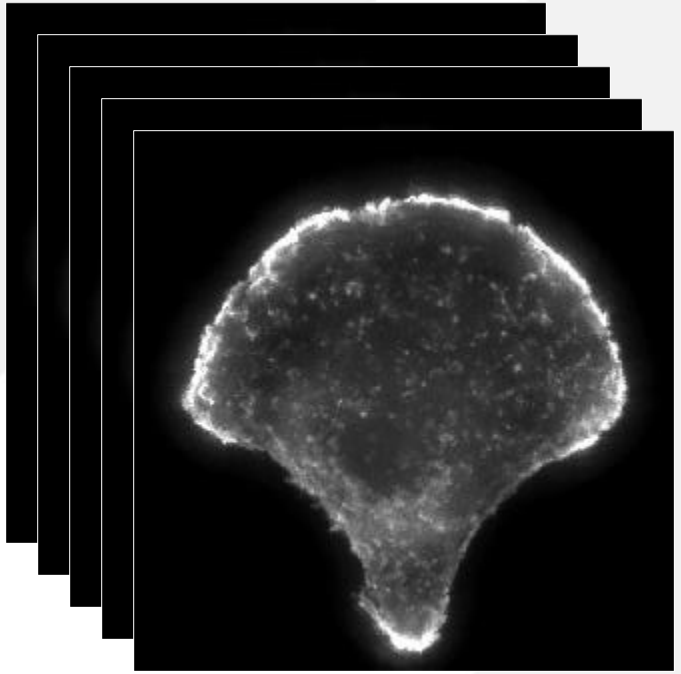




automated scanning acquisition process

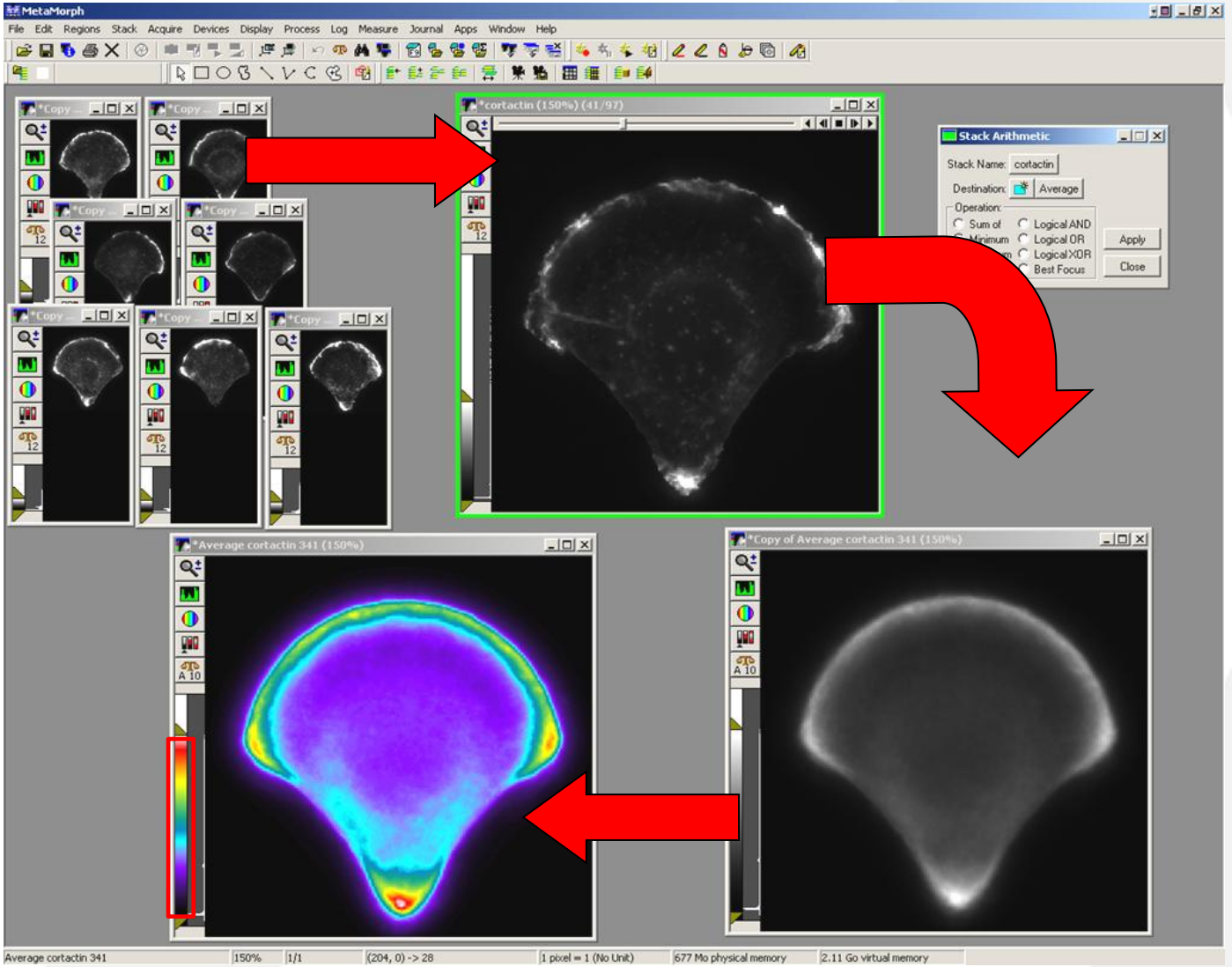




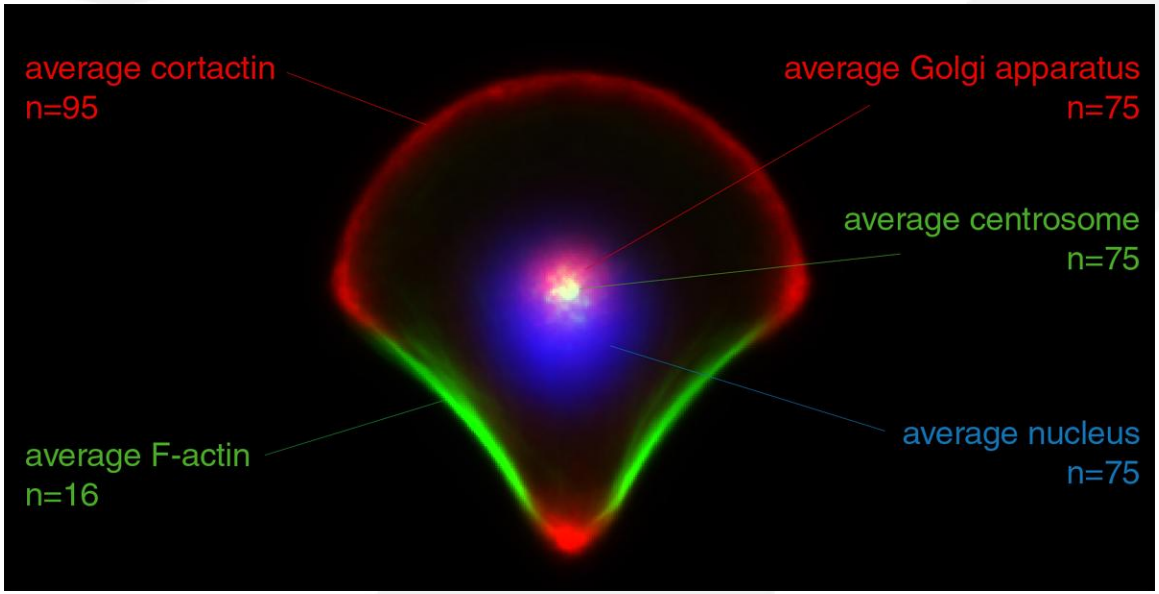


CYTOO™
CELL ARCHITECTS

Reference Cell™: Compiling marker distribution



Reference Cell™: A new way to look at your cell



Théry *et al*, PNAS, 2006

- Carry out unlimited protein distribution heat maps
- Compare different studies between labs
- Extract reliable, reproducible and quantitative data from less than 100 cells
- Build a Knowledge database

Benefits of micropatterns in HCS: High Sentivity with only 50 cells analyzed

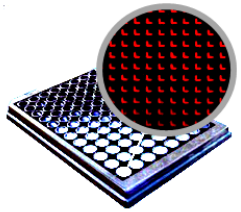
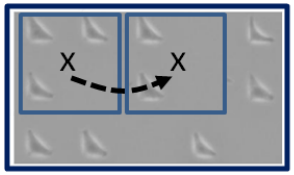


Plate with Cy3 labeled L-micropatterns

HeLa cells

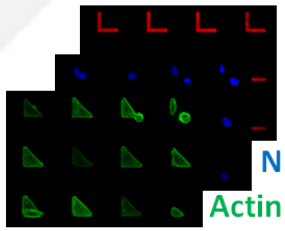


3hrs after cell seeding

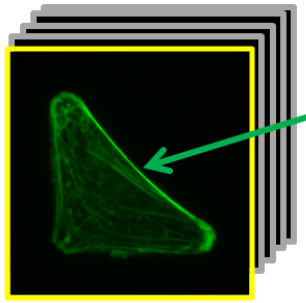
Drugs incubation 1hr

Fixation and Staining

Automated Image Acquisition



Automated Image Processing



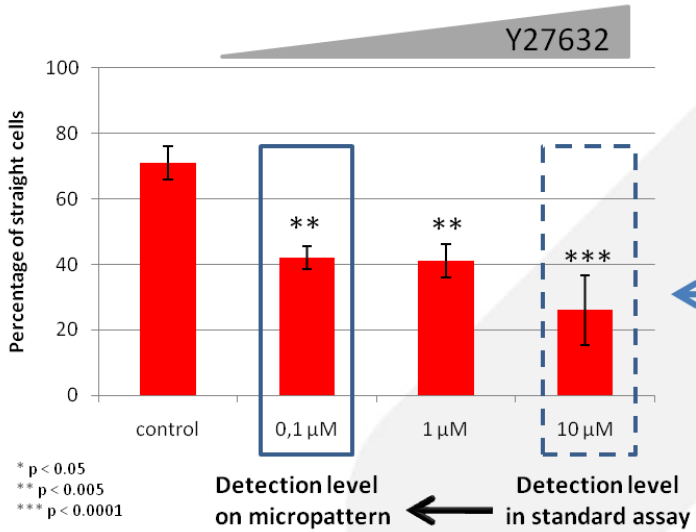
Extraction of individual cells

Automated Image Analysis

Straight cell

Curved cell

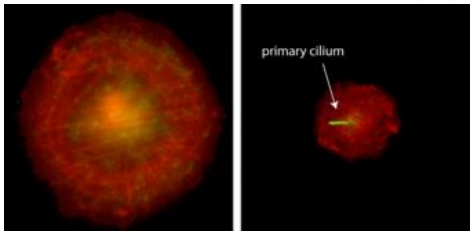
Results with 50 cells analyzed in triplicate



http://www.jove.com/

New opportunities: Access to relevant cellular models

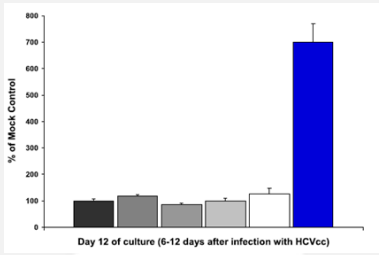
CYTOO
CELL ARCHITECTS



Pitaval *et al* JCB 2010

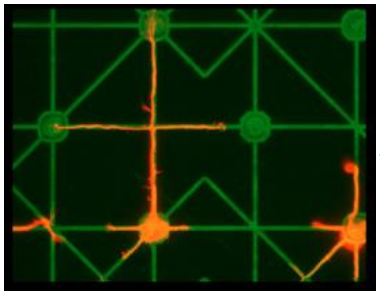
Positively influence polarity & ciliogenesis

Improve primary cell functions



Ploss et al. PNAS 2010

Guide neuron growth

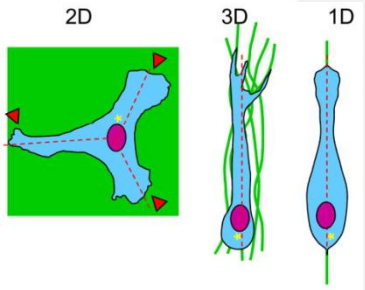


Withers et al, J Neurobiol 2006

Axone-dendritic growth.mov

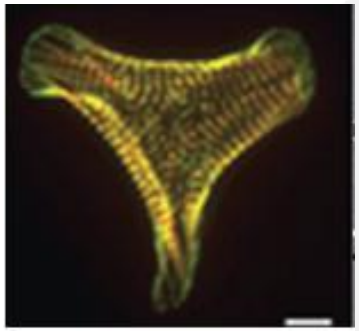
Permits cells to **express functions** not possible in the disorganised culture dish environement

Mimic 3D migration



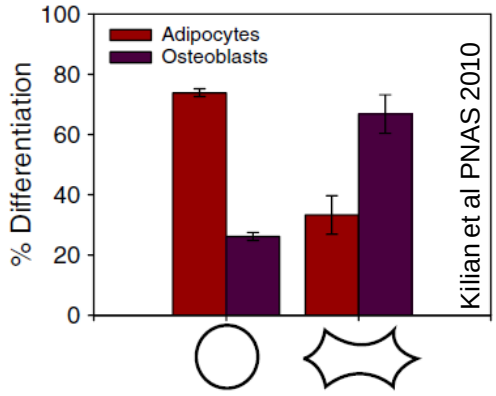
Doyle et al. JCB 2009

Beating of cardiac cells



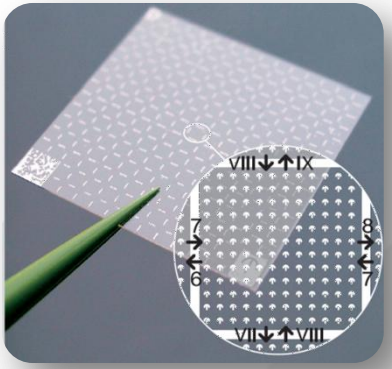
Yasha Kresh, unpublished, Drexel Univ

Direct stem cell fate



CYTOO's Products: Cell Analysis tools

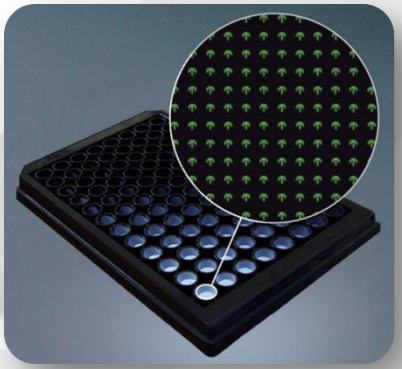
Research



CYTOOchips™

Glass 170µm-thick coverslips of 2x2cm²
Up to 20 thousand fibronectin micropatterns
Enter into 6-well microplates
Grid Positioning System: Micrometric cell localization grid

Screening



CYTOOplates™

Glass-bottom (w/ black plastic frame) microplates
96 or 384 well format
>1000 fibronectin micropatterns per well (for 96wells)

CYTOO's Service:
Our expertise for your project