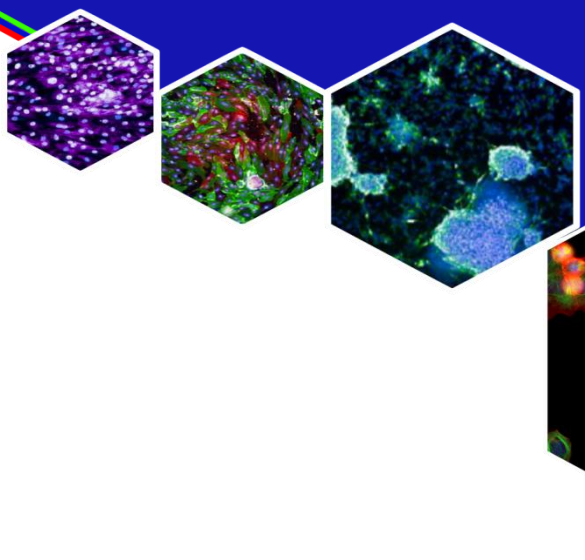
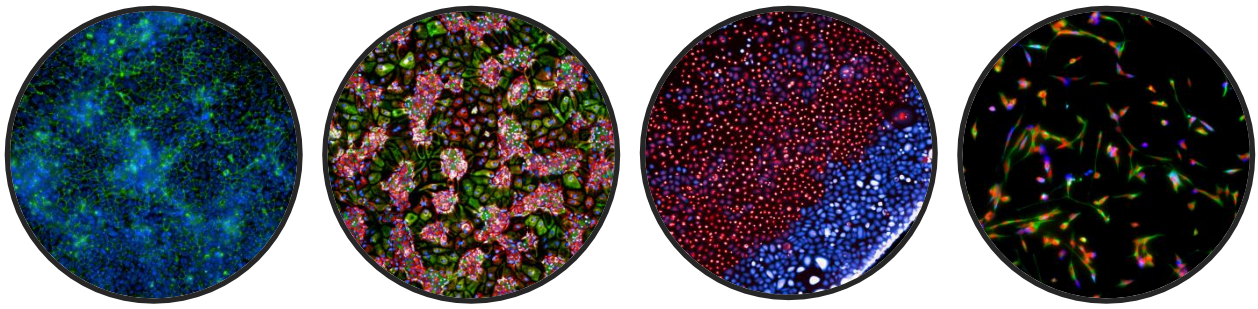


High Content Imaging :

Meaningful pictures for relevant results in dermocosmetology

"We deliver High Content screening services with exhaustive, high quality and robust phenotypic data." Nathalie MAUBON, CEO at HCS Pharma



Custom Assay Development On Demand

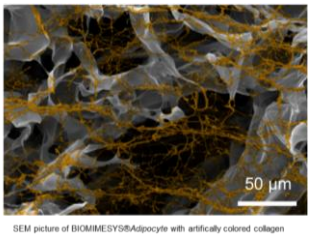
1 - CHOOSE YOUR CELL CULTURE SYSTEM

2D

96 or 384-well plates

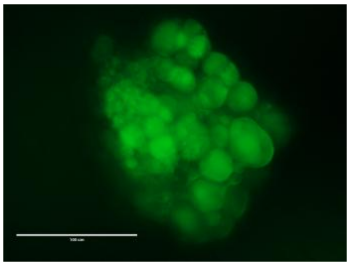
3D

ULA plates



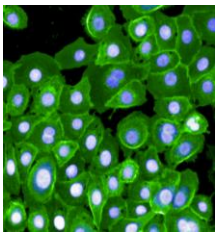
BIOMIMESYS ®

Cell lines

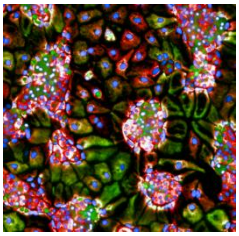


Adipocyte in BIOMIMESYS ®

Primary cells or IPS



e.g. keratinocytes



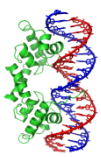
e.g. hepatocytes

- Keratinocytes
- Fibroblastes
- Melanocytes
- Macrophages
- Reconstructed skin

2 - CHOOSE YOUR INDUCERS & INCUBATION TIME

Fixed Cells

Live Cells

Small Molecules	Biologicals	Ingredients	Starvations	UV Radiations
				

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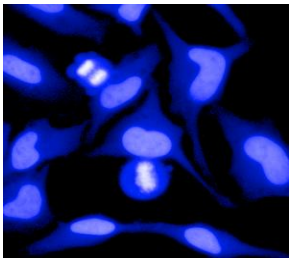
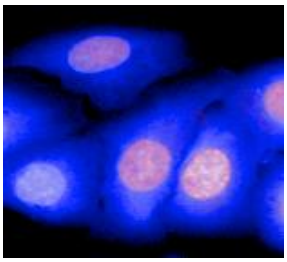
Custom Assay Development On Demand

3 - CHOOSE YOUR READ-OUTS

Proliferation, apoptosis, Cell motility (tracking)

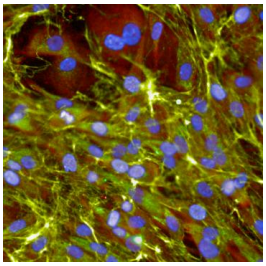


Hoechst
HeLa



Hoechst ; EdU
NHEK

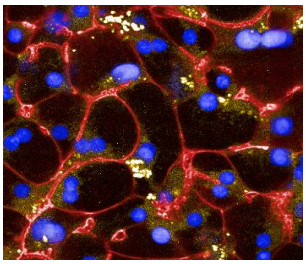
Extra-cellular Matrix



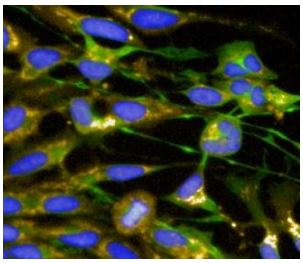
Multiplex Protein labbeling :

Nucleus
Pro Collagen 1
Collagen 1
Fibronectine

Cell structure : organelles, cytosquelette,…

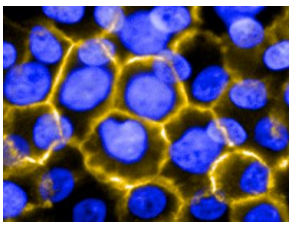


Hoechst ; Actin ; BSEP
Human hepatocytes

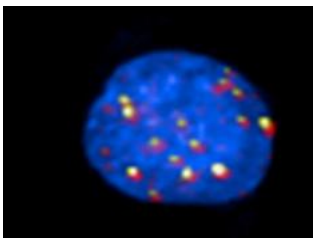


Hoechst; βIII-tubulin; mitotracker
SH-SY5Y

Protein analysis

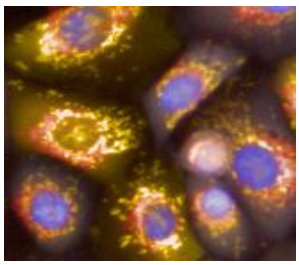


Hoechst ; AQP3
NHEK

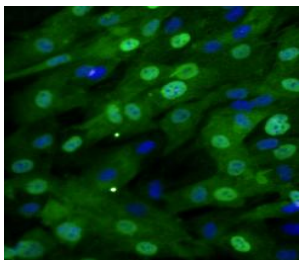


Hoechst ; 53BP1 ; γH2AX
NHEK

Stress : ROS, mitochondrial potential, inflammation…



Hoechst ; ROS ; mitoctracker
NHEK



Hoechst ; NFkB
human fibroblast + TGFb

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Anti-Aging Activity

In vitro collagen deposition and fibrosis

Fibrosis is involve in wound healing mechanism and represents a major global disease burden. The formation of insoluble pericellular collagen matrix is linked to fibrotic processes and could be assess in vitro for screening procedures prior to animal testing. To improve collagen deposition in vitro, we use charged macromolecules to increase collagen nucleation lead to a granular deposition on human primary fibroblast. This approach is based on the creation of the excluded volume effect (Lareu et al, 2007).

Requirements

Compounds: pure or extracts

Cells: Human Fibroblasts

Plates : 96-well plates

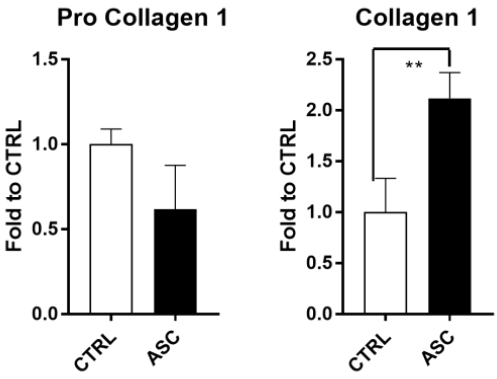
Time of exposure: 1 day to 1 week

Matrix endpoitns :

- Pro collagen 1
- Collagen 1
- Fibronectin

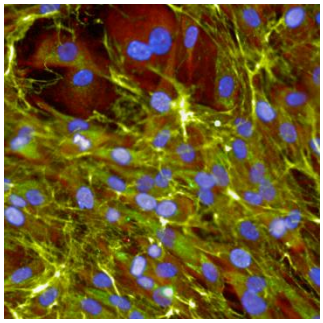
Imaging and quantifying pericellular matrix

In vitro imaging of pericellular matrix required a multiplex protein labbeling for fluorescence high content imaging using our Micro XLS ImageXpress (Molecular Devices). After 5 days of exposure to L-Ascorbic Acid 2-Phosphate Sesquimagnesium (**ASC**), pericellular matrix was labbeled and quantified.



The amount of Pro Collagen 1, Collagen 1 and Fibronectin was quantified per cells and compared to control condition (**CTL**).

Thought this model pro and anti fibrotic compounds can be evaluated during several days.



Human fibroblast after 5 days of culture

Multiplex protein labbeling :

Nucleus **Pro Collagen 1**
Collagen 1 **Fibronectine**

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Anti Inflammatory activity

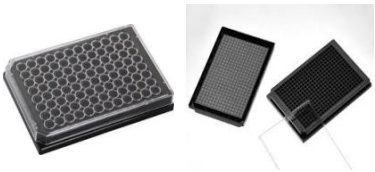
Study inflammation & soothing pathways

NFkB (Nuclear Factor kappa-light-chain-enhancer of activated B cells) is found in almost all animal cell types and is a key player in the inflammatory response. It belongs to the category of "rapid-acting" primary transcription factors since it is present in cells in an inactive state, and is quickly activated and is a first responder to harmful cellular stimuli, including pro-inflammatory stimuli.

Requirements

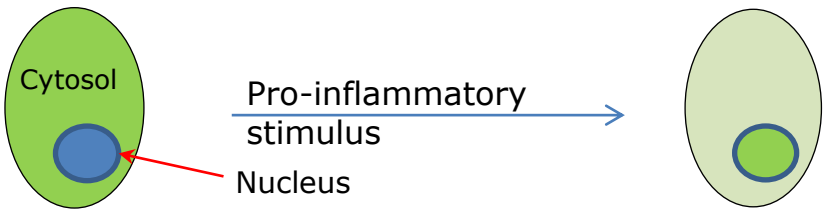
Compounds: pure or extract
Cells: - adherent cells
- primary cells or cell line

Plates :
96 or 384 wells plates

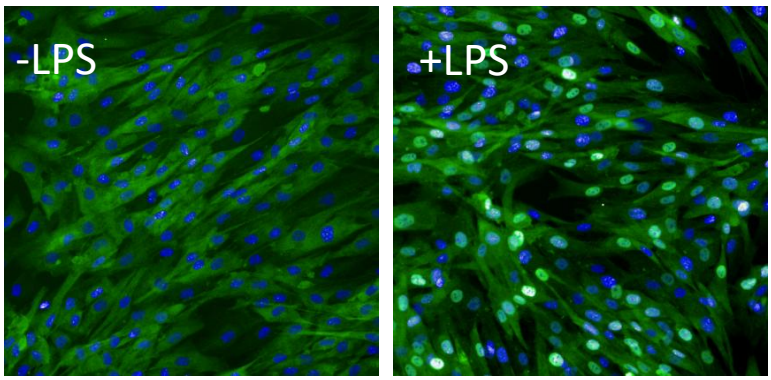


Example of LPS

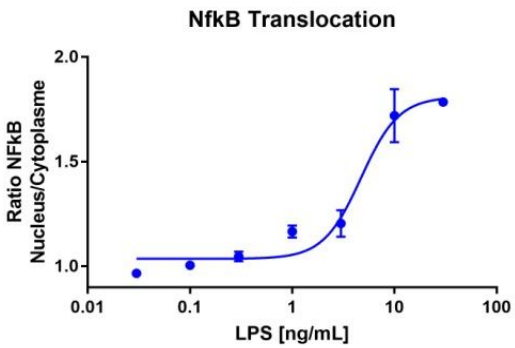
Primary human fibroblasts cells were exposed to several concentrations of bacterial lipopolysaccharide (LPS).



The nuclear receptor NFkB (green) is translocated from the cytosol into the nucleus



Primary human dermal fibroblasts: Nuclei in blue, NFkB in green



Quantification of nuclear translocation of NFkB after exposure of primary human dermal fibroblasts to increasing concentrations of LPS

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Anti-Oxidant Activity

Synthesis and storage of Glutathion

Glutathione (GSH) is the major antioxidant endogenous peptide, which scavenges reactive oxygen species (ROS) including H2O2. GSH is also involved in detoxifying processes by binding heavy metals, forming water soluble conjugates. Endogenous GSH pool reduction is a cause of oxidative stress damages associated with mitochondrial deterioration. Monochlorobimane reacts with GSH to form a highly fluorescent dye.

Requirements

Compounds: pure or extracts

Cells: Primary cells and cell line

Plates : 96-well plates

Time of exposure: 1 day to 1 week

Endpoints:

- Glutathion pool
- % of positive to GSH
- Cell viability

Imaging and quantifying Glutathion

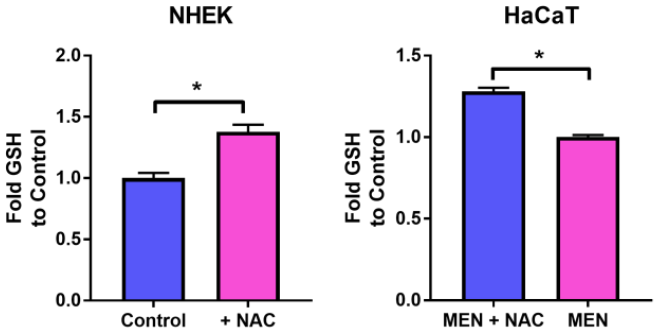
Quantifying glutathion (GSH) pool is a marker of anti oxydative properties of compounds. To defined is compounds enhance a curative nor protective effetc, we compared the GSH pool with a oxydative species inducer Menadione (MEN), and GSH inducer N-Acetyl-Cystein (NAC).

NHEK :

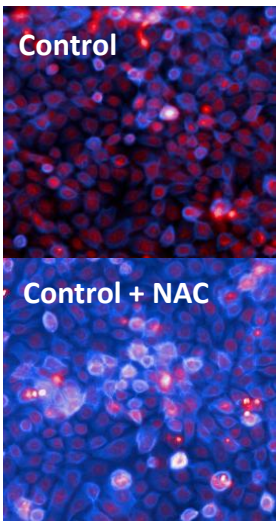
Normal Human Epidermal Keratinocytes (NHEK) isolated form juvenile foreskin.

HaCaT :

Immortal keratinocyte cell line from adult human skin.



NAC = N Acetyl Cystein ; MEN = Menadione



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Cicatrisation / Repair Assessment

Following in vitro "wound" reparation

Wounds can exhibit impaired healing, as a consequence of pathologic failure to process one of the normal stage of healing. Wound healing impairment could be characteristic of the treatments of chronic wounds due to immobilization, diabetes, and skin infection. Characterization of compounds efficacy on wound healing parameters is important dermato/cosmetology, including scar elimination, anti-aging and aesthetic cosmetics and much more.

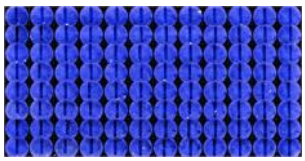
Requirements

Compounds: pure or extracts

Cells: - keratinocytes
- fibroblasts
- adherent primary cells or cell line

Plates : 96-well plates

Scratch : Siclone ALH 3000 96-well head

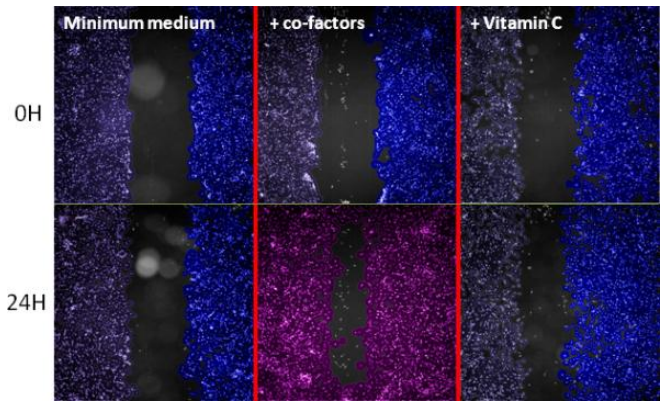


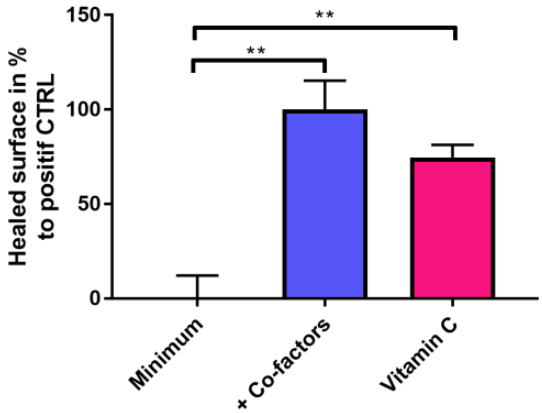
Automated 96-well scratch assay

Mechanical scratch is performed using a 96-well head on the whole plate. Cells wound healing is followed in live cells and healed surface is quantified using automated image analysis. Depending on studies objectives, co factors and vitamin C can be used as positive control.

Delivered parameters :

- Percent of healed surface
- Cell tracking
- Live recording of cell migration





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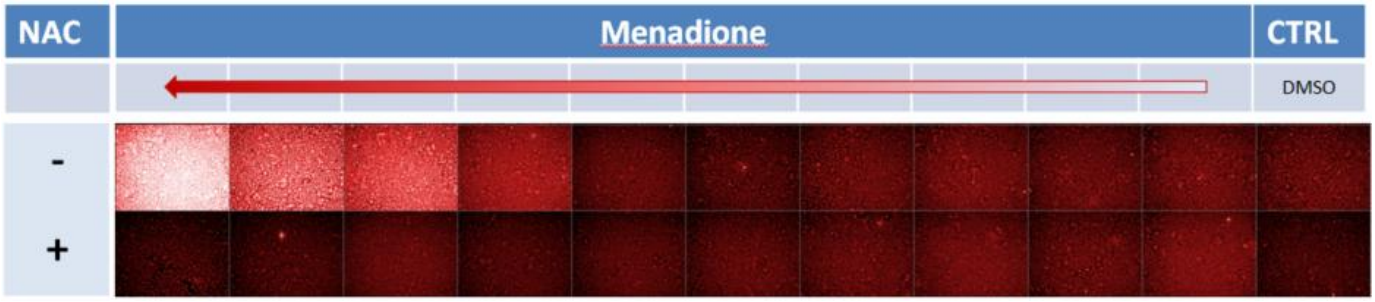
Oxidative stress assessment

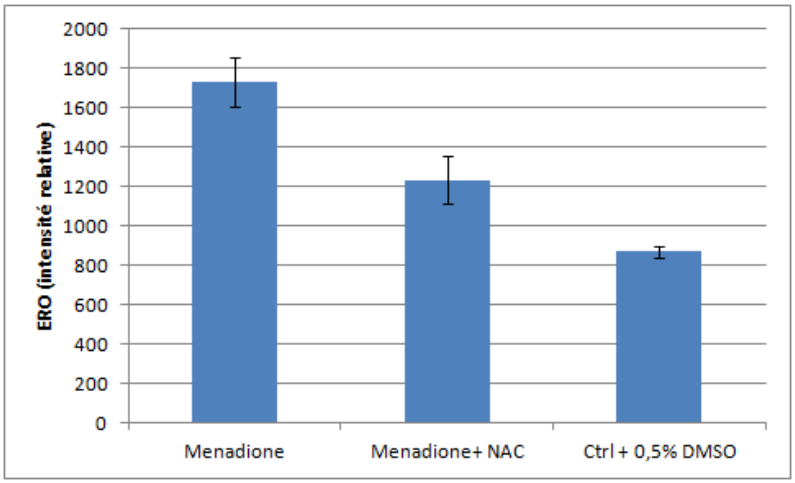
Antioxidant protection on primary human keratinocytes



NAC = N-acetylcystein

	ROS (Inducing Factor)
Menadione	1,99
Menadione+ NAC	1,42
Ctrl + 0,5% DMSO	1

NAC protecting factor = 57,7%



100 µM Menadione alone or with 50 µM N acetylcystein, n = 6
ROS = Reactive Oxygen Species

Available on all of our cell lines!

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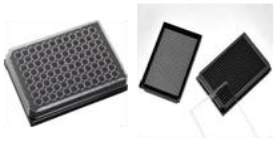
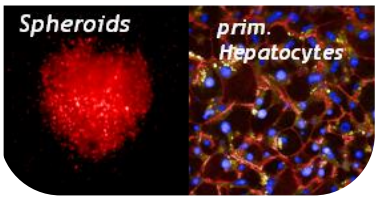
Our Process

CELL CULTURE

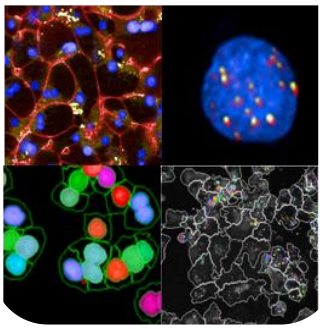


96 or 384-well

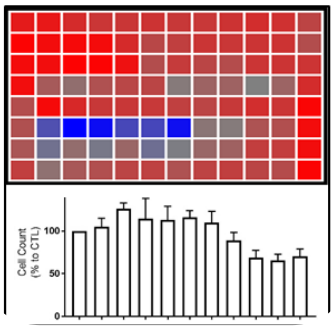


AUTOMATION

IMAGE ANALYSIS



DATA MANAGEMENT



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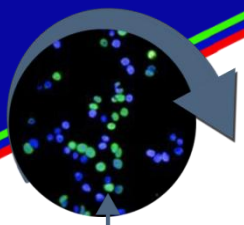

- Phenotypic screening
- Multi-parametric study
- Innovative & relevant in vitro models
- Biological content enriched information
- Big Data / Machine learning
- Automated process

Expertise Efficiency Flexibility Transparency

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