



PRIMO

THE FIRST MULTI-PROTEIN
PHOTOPATTERNING SOLUTION

alvéole 

PRIMO

A new photopatterning device that enables biologists to create multi-protein patterns for cell-based assays that are essential for their research work.

PATENTED TECHNOLOGY

PRIMO is based on the patented LIMAP technology (Light-Induced Molecular Adsorption of Proteins) which combines:

- A spatial UV modulated illumination system
- A specific and photoactivated reagent, the PLPP

CUSTOM

Directly docked on a microscope, PRIMO generates any type of shape, picture or freely drawn pattern.

- **QUANTITY CONTROL**
of deposited proteins
(256 levels of grey)
- **MULTI-PROTEIN**
(up to 3 without restrictions)
- **HIGH RESOLUTION**
(1.2 μm over the entire field of view)
- **FAST**
(20s for a full field pattern)

VERSATILE

PRIMO allows *in situ* patterning on a wide range of substrates:

- Various materials: glass, plastic, PDMS...
- Various cell culture substrates: coverslips, slides, Petri dishes, microfluidic devices, 3D devices...



Projected image

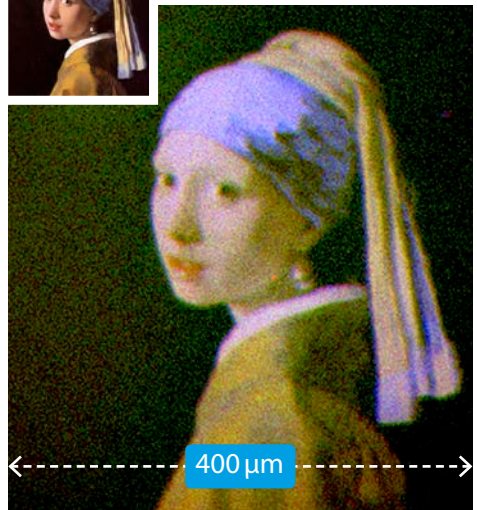


Image obtained by photopatterning
3 fluorescent dyes (PEG-FITC, PEG-TRITC, PEG-Atto 647)
successively deposited*

1

PATTERN DESIGN

A Yin & Yang image file is sent to PRIMO.

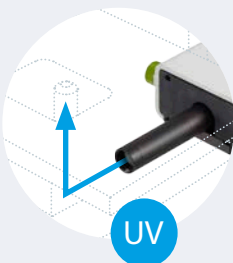


2

UV ILLUMINATION

PRIMO projects the image onto the substrate (UV light).

The pattern results from the combined action of UV and PLPP.



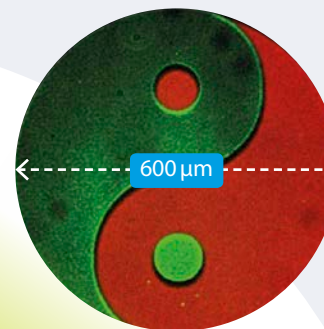
WARNING - INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT
WAVELENGTH 375 nm
POWER UP TO 500 mW

3

PROTEIN MICROPATTERNING

Proteins are added and bind to the illuminated areas.

Here, Yin & Yang pattern of two proteins, Cy3 labelled Fibronectin (red) and Alexa488 labelled streptavidin (green) on culture slide.*

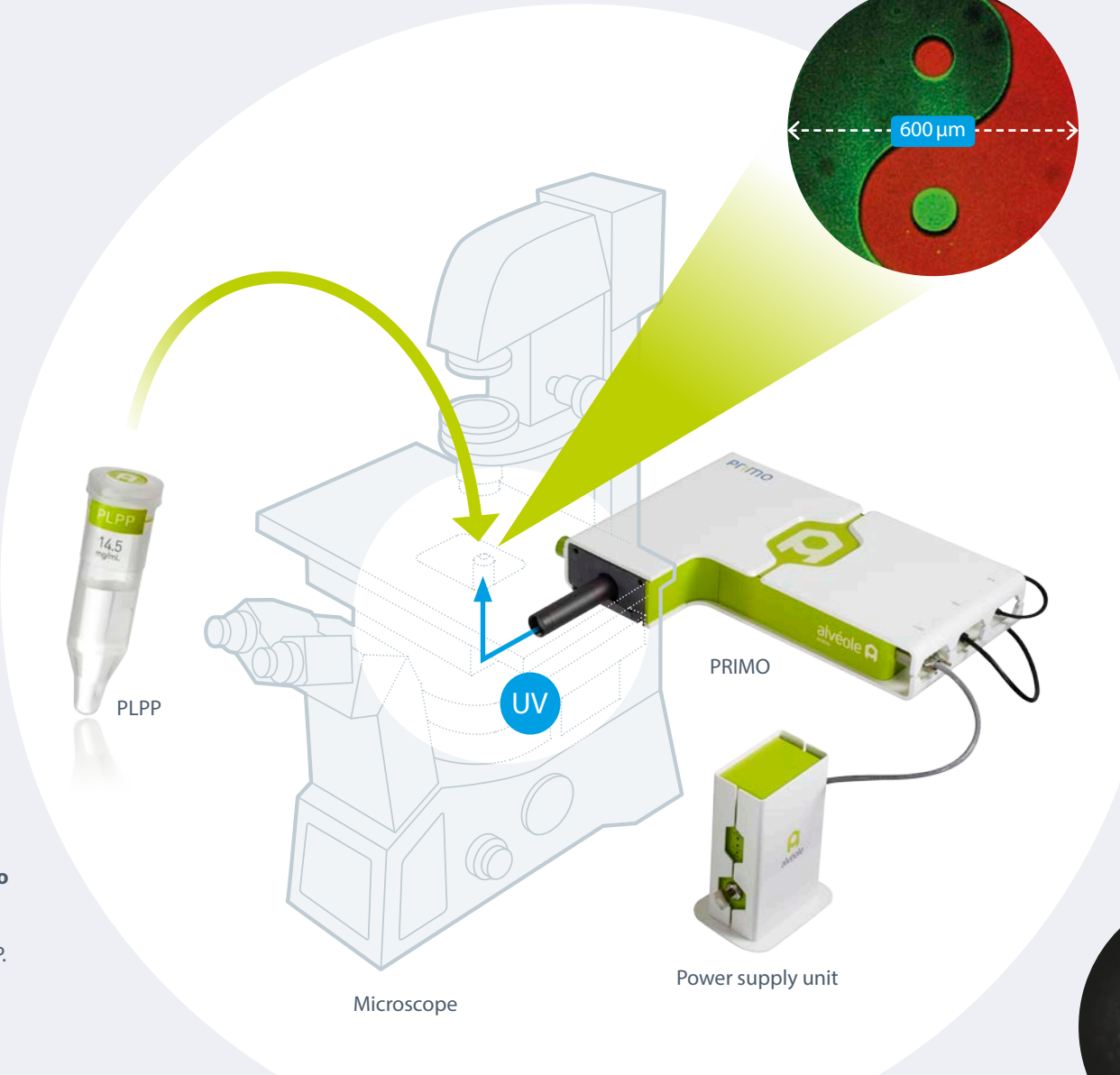
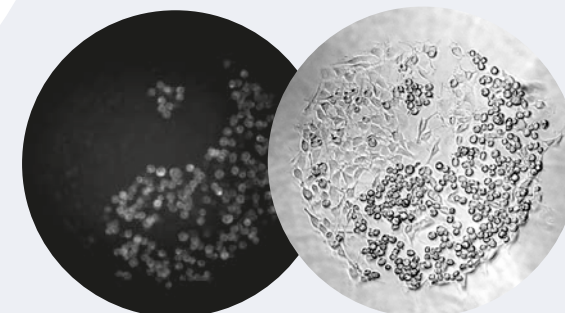


4

CELL ADHESION

A first population of S180 cells expressing E-Cadherin GFP is seeded and adheres only to the Fibronectin Yin pattern.

After incubation with biotinylated Fibronectin, a second population of MEF cells is allowed to adhere to Yang pattern.*



* Strale PO et al., Adv Mater. 2015

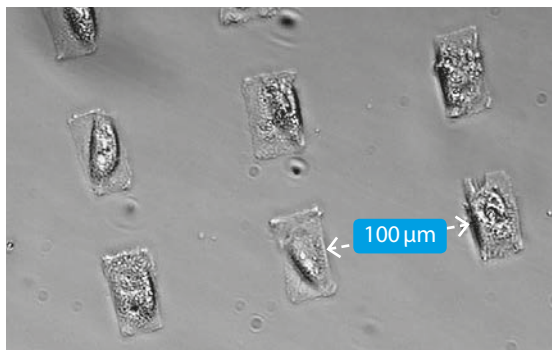
APPLICATIONS

CUSTOM MICROPATTERNING



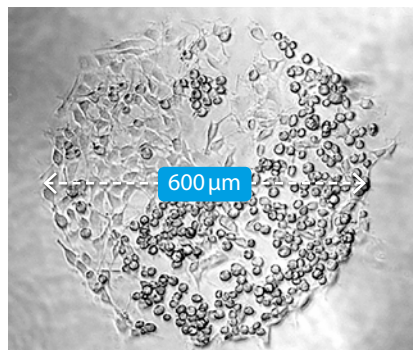
Mouse teratocarcinoma cells plated on fibronectin micropatterns.

SINGLE CELL



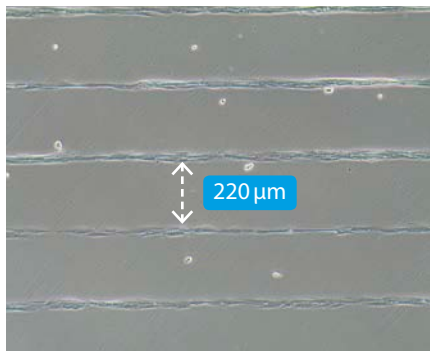
Fibroblasts plated on fibronectin micropatterns (after 2 weeks).

CELL CO-CULTURE



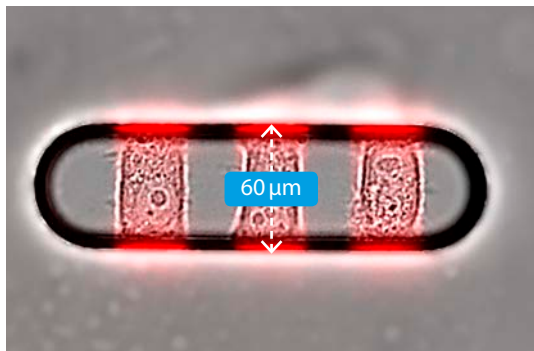
S180 cells and MEF cells successively seeded on a Yin & Yang pattern (Yin: fibronectin, Yang: streptavidin incubated with biotinylated fibronectin).*

NEUROSCIENCE



Astrocytes cultivated on fibronectin lines in order to control microtubule orientation and thus measure intracellular trafficking with a good repeatability.**

ORGAN-ON-A-CHIP



3 hepatocytes HepG2 adhering on patterns of fibronectin patterned on the sides and the bottom of a micro-well.***

