

PRIMO: OFFERING CUSTOMIZED CONTROL OF THE CELL MICROENVIRONMENT

As it has become essential to control the behaviour and development of living cells in culture, Alvéole is launching PRIMO, a new photopatterning device that enables biologists to create protein patterns for cell-based assays that are essential for their research work.

The issues

For many years, studying the influence of the microenvironment on intracellular and intercellular mechanisms has been essential for research in cell and medical biology; particularly in the areas of oncology, immunology or neurology. Among the methods for controlling this microenvironment is the rapidly developing process of “micropatterning”, which involves creating protein patterns on which living cells are cultivated. This procedure has met with great success among biology researchers for its potential application in 3D cell culture, organ-on-chips or in the study of neuronal development. However, current micropatterning techniques are tedious, complex, non-quantitative and restricted to the use of a single protein.

A tool for the future

The device called PRIMO was developed to enable researchers to adjust their protein micropatterns precisely, easily and quickly, whether for studying the effect of a drug or mimicking in vivo physiological conditions at the level of a single cell or cell populations. PRIMO opens up new perspectives for multiple applications such as stem cell research, for regenerative medicine, cell-based assays for developing new drugs and predictive toxicology which represent an excellent potential as an alternative to animal testing.

The technology

The PRIMO technique of multi-protein photopatterning is based on LIMAP technology (Light Induced Molecular Adsorption of Proteins). The technology, protected by two patents filed in collaboration with CNRS and the University of Bordeaux, combines a UV illumination system controlled by a dedicated software (named “Leonardo”) and a specific photoactivatable reagent (PLPP). Working together, these two key system components make it possible to generate, in only a few seconds, any multi-protein pattern in standard cell culture substrates, at micrometric scale and with excellent reproducibility.

After one year of conducting tests in several basic research laboratories, including the Saint-Louis Hospital in Paris, the Interdisciplinary Institute of Neurosciences at CNRS in Bordeaux and the Mechanobiology Institute of the National University of Singapore, Alvéole is launching PRIMO internationally.



Alvéole

Founded in 2010 by three researchers from CNRS; Dr. Maxime Dahan, a cell imaging specialist; Dr. Vincent Studer, a microfluidics specialist; Dr. Jean-Christophe Galas, a nanotechnology specialist; and Quattrocento (a builder of technology-based companies in the life sciences field), Alvéole develops and markets innovative tools for controlling the cell microenvironment.

More information can be found under www.alveolelab.com

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