



# “Customable” “stiffness-controlled” hydrogels for *in vitro* assays

## ■ KEYWORDS

Cell culture; *in vitro* screening assays; culture substrate

## ■ PATENT

Title: Micro-engineered hydrogels

Priority date: 25/05/2012

- Pending US application US20150104812
- **European patent granted (EP2854885)** and validated in FR, BE, UK, and DE

## ■ LICENSING

Exclusive, non-exclusive licences and research collaborations

## ■ INVENTORS

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## ■ REFERENCE

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## ■ PROBLEM

**Current cell culture substrates for *in vitro* assays are not accurately replicating the real *in vivo* environment of cells.** These tests are usually performed with primary or immortalized cells grown on culture dishes made of rigid polystyrene or glass, which are rarely functionalized with a specific protein coating. In addition, plastic and glass culture dishes are characterized by a very high stiffness ( $\sim 10^9$  Pa), far from the softness of physiological tissues ( $10^2$ - $10^5$  Pa).

Those substrates being too rigid or too soft induce errors, misinterpretations and lack of confidence in screening assays and research results provided with those cells.

## ■ SOLUTION

We addressed this challenge by developing **innovative soft hydroxy-PAAm culture substrates that enable a precise control of both the stiffness and the biological coating.**

This strategy permits to obtain **tailor-made culture substrates that match the physico-chemical environment of the tissue concerned.** Our team showed that muscular or neuronal cells grown on these optimized culture substrates present a more relevant phenotype and optimal cellular functions compared to classic cell culture conditions.

## ■ INNOVATION

- Modulates stiffness
- Replicates *in vivo* environment of cells

## ■ TECHNOLOGY STATUS

TRL 4 : Laboratory testing of prototype

## ■ MARKETS

- Drug development
- Cell culture
- *In vitro* assays (toxicity, efficacy, ...)
- Research and development

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