HaloScreening

3D scaffolds for High Throughput Screening (HTS)

Gelatex introduces HaloScreening, a ready-to-use 96 well plate embedded with microfibrous 3D scaffolds, produced using HaloSpin patented technology. It is specifically designed for high-throughput screening (HTS) in both industrial and research settings. The bottom of each well contains scaffolds made of high-quality poly-L-lactic acid (PLLA) with optimized fiber diameters for improved cell-cell and cell-matrix interactions. The well plate is sterilized and ready to use, seamlessly integrating into standard workflows and automated systems. Downstream analyses and visualization can be conducted directly in the plate used for cell culturing, streamlining workflows and enhancing efficiency in HTS. This integrated approach is crucial for accelerating processes and improving productivity in industrial settings. The well plates are also customizable to meet specific customer requirements and are applicable in cancer and drug screening, toxicology, compound testing (hits), in vitro disease modeling, basic cell biology, and various other pharmaceutical and therapeutic applications.

Features & Benefits

- **Scaffold:** highly porous, 3D, Mimics in vivo environment, free of animal derived product.
- **Material:** medical grade PLLA, Non-degradable, welded in 96-well plate (black).
- **Cell visualization:** Fluorescence imaging directly from the plate, also supports phase contrast.
- **Cell viability:** Compatible with most 2D assays, direct scanning through well plate reader.
- **Sterilized & Ready-to-Use:** Gamma sterilized plate, sealed in medical package.
- **Reproducible & Reliable:** Consistent cell growth ensures reproducibility and reliability.
- **Easy handling:** Compatible with industry-standard automated handling.
- **Coating:** Scaffolds can be coated with ECM proteins for customers with specific needs.
- **Technical support:** Protocols for cell seeding, assays, and imaging are available.
- **Manufacturing & Cost:** Produced in Class 7 clean room conditions, cost-effective and cheaper.

Figure 1: HaloScreening 96 well Plate

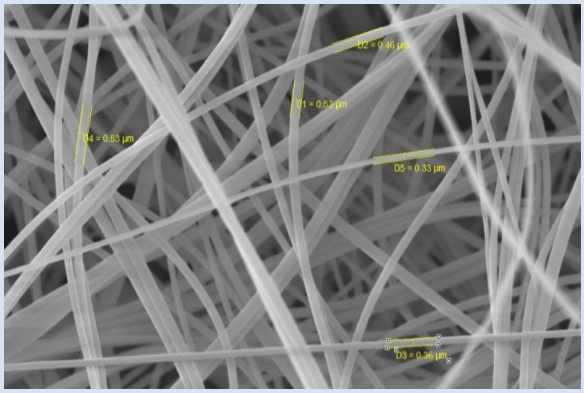

Figure 2: SEM of PLLA scaffold

Background: 3D scaffolds provide a more physiologically relevant environment, improving the accuracy of drug screening results. For instance, the effective concentration of doxorubicin in 3D cultures was found to be twice as high as in 2D cultures, offering a more realistic assessment of drug potency **(1)**. PLA, a biocompatible polymer, is widely used in tissue engineering due to its excellent mechanical properties and low cytotoxicity **(2)**. Moreover, patients with PLA coronary stents implanted for six months showed no signs of immune rejection or cytotoxic effects **(3)**. In a recent report, liver-specific nanofiber scaffolds composed of PLA and liver extracellular matrix were shown to sustain primary hepatocyte viability and functionality over extended periods, and were effective in predicting in vivo drug responses **(4)**. Therefore, PLA scaffolds have demonstrated significant potential for use in HTS applications.

(1) Čiužas, D., Krugly, E., & Petrikaitė, V. (2024). Materials Today Commun., 39, 108707. **(2)** DeStefano, V., Khan, S., & Tabada, A. (2020). Eng. Regen., 1, 76-87. **(3)** Tamai, H., et al. (2000). Circulation, 102(4), 399-404. **(4)** Vasudevan, A., et al. (2023). ACS Biomater. Sci. Eng., 9(11), 6357-6368.

In-house Experiments and Results

Evaluated with HaloScreening

Cell seeding: 4000 to 64000 /well

Cell line: MDA MB 231, U2OS, Hela, Huh7, Hek293, MCF-7, HFF-1, and Hekn.

Culture type: Mono- and Co-culture

Viability assays: WST-8, XTT, and MTS.

% Variability (8 wells): 2% - 10%

Z' factor ≥ 0.60

Fluorescence staining: Calcein, Propidium iodide, Phalloidin, etc.

Drug screening evaluated: DOX in MBDA MB 231 *(under progress)*

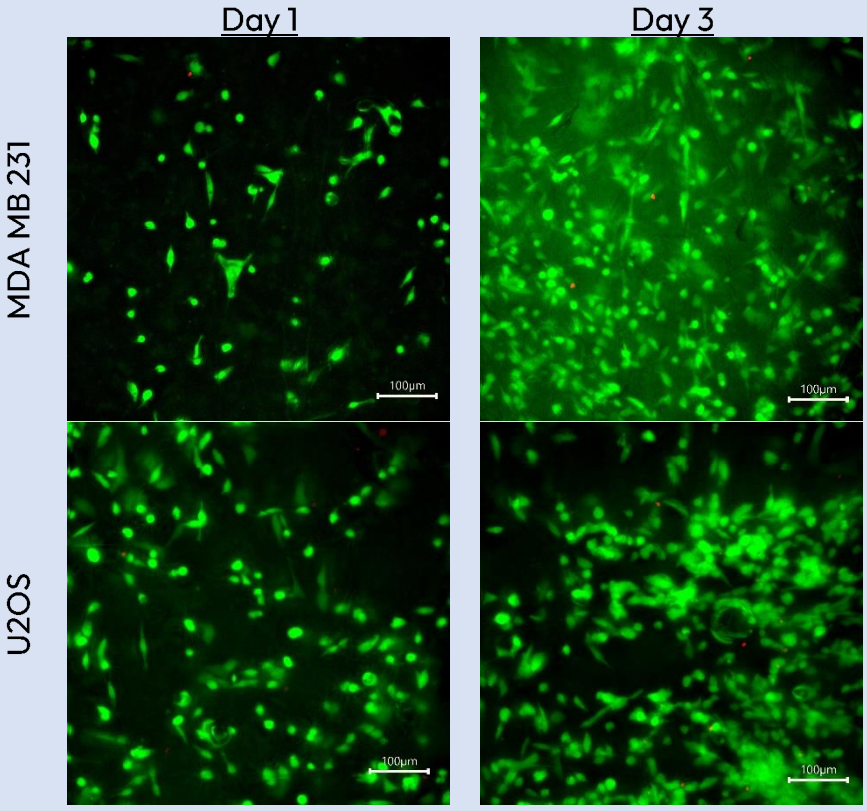

Figure 3: Cells stained with Calcein/PI in HaloScreening

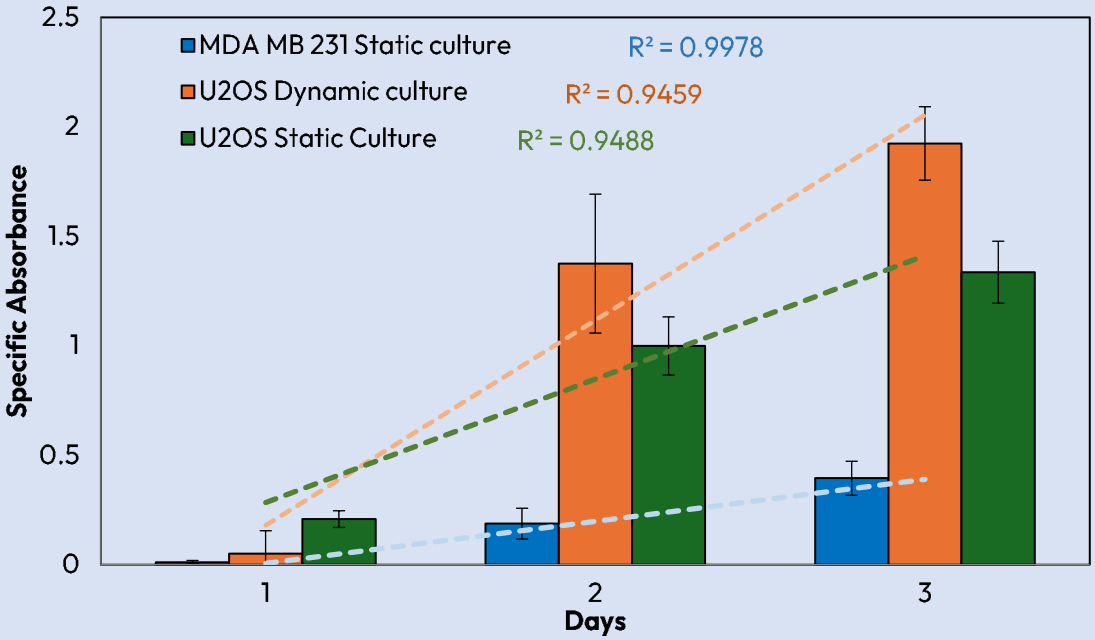

Figure 4: Cells cultured on HaloScreening and evaluated though WST – 8 assays.

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