metatiSue

INNOVATION STARTS WITH A CHOICE.
WILL YOURS BE HUMAN-BASED?

hPLMA

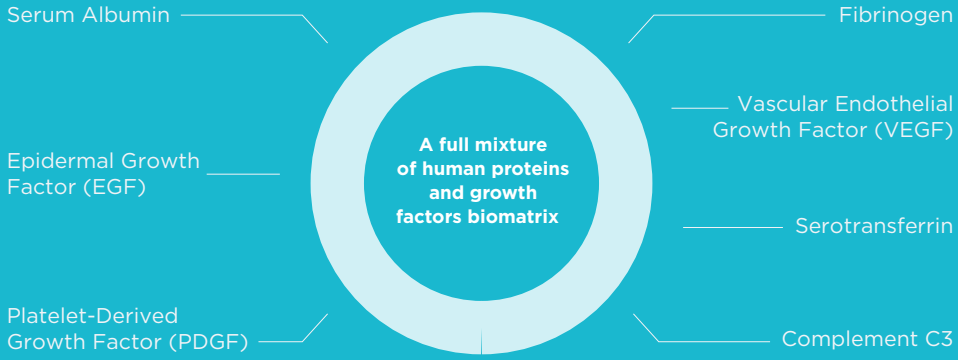
METHACRYLOYL PLATELET LYSATES

hPLMA

Methacryloyl platelet lysates

hPLMA represents an innovative cell culture platform derived from human platelet lysates, offering a highly relevant microenvironment that promotes robust cellular growth and proliferation.

Components



Specifications

- White to light yellow powder or filaments
- Controlled degree of methacrylation
- Low endotoxin
- Sterile (bacteria, fungi and mycoplasma)
- Supports invitro maintenance of adherent cultured cells

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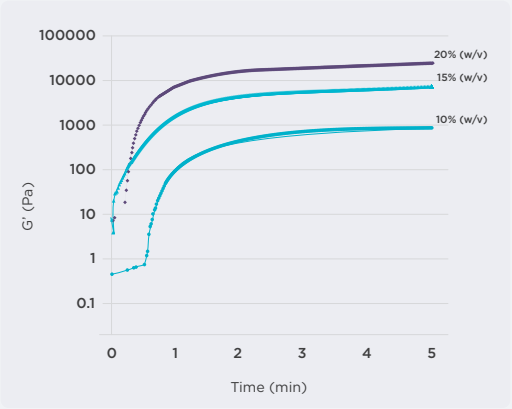
3D Cell Culture

Cell Encapsulation in Hydrogels

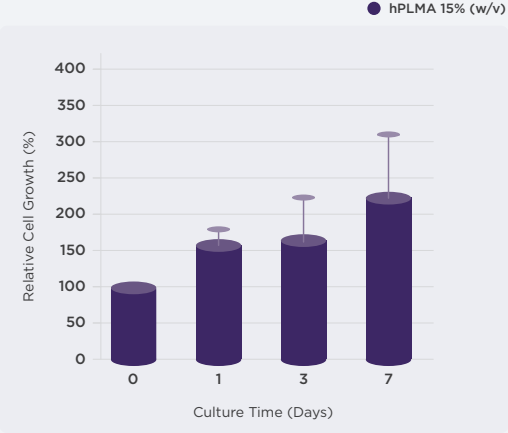
Mechanically Tunable

hPLMA hydrogels have tunable mechanical properties that can be modified by altering the polymer concentration in the precursor solution, allowing for the simulation of varying tissue stiffness.



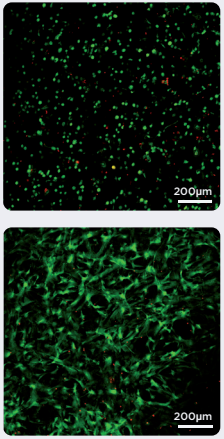
Cell viability and proliferation

Encapsulated human adipose stem cells maintain their viability for at least 7 days and are able to proliferate inside the hydrogels.



Human adipose-derived stem cells (hASC)

hPLMA 15% (w/v)



Live/Dead staining of hASC

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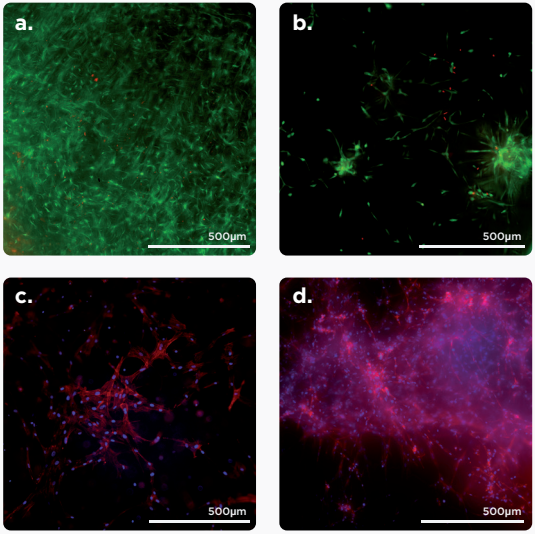
hPLMA

Advantages of hPLMA compared to other options in the market

Properties	*hPLMA*	*Matrigel*
• Human origin	✓	×
• High viability, cell growth and proliferation	✓	✓
• Low immunogenicity	✓	✓
• Even cell distribution in hydrogels	✓	×
• Stability for 30 days in cell culture conditions	✓	×
• Simple to prepare and thermally stable	✓	×
• Tunable mechanical properties	✓	×
• Potencial clinical applications	✓	×

For 10 ml of Matrigel ~3 mice are sacrificed, while hPLMA has an ethical origin

hPLMA 15%(w/v) Matrigel 1.2%(w/v)



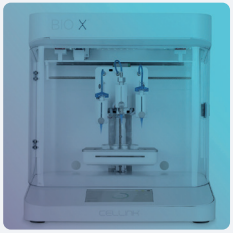
Fluorescence images of human adipose stem cells in hPLMA, compared to clustered and dying cells in Matrigel at 7 days of culture (a./b. live cells (green), dead cells (red); c./d. actin filaments (red), nucleus (blue)).

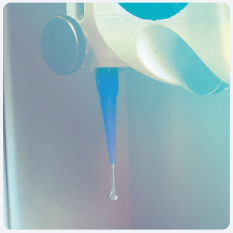
Bioinks

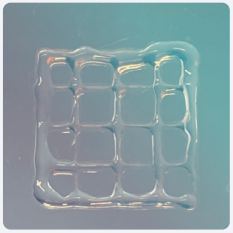
hPLMA

hPLMA can be used as an ink for bioprinting in different printing techniques, such as extrusion or DLP. It can also be added to new ink formulations as a complement for a human touch.

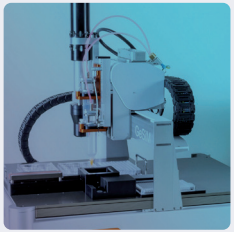
hPLMA ink for extrusion 3D printing



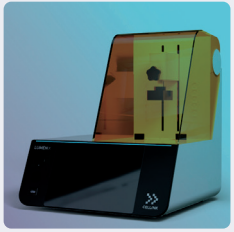


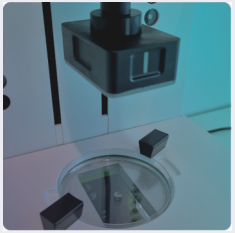


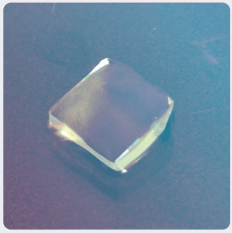
hPLMA ink for extrusion 3D printing
with a supporting bath (FRESH)*



hPLMA ink for DLP 3D printing





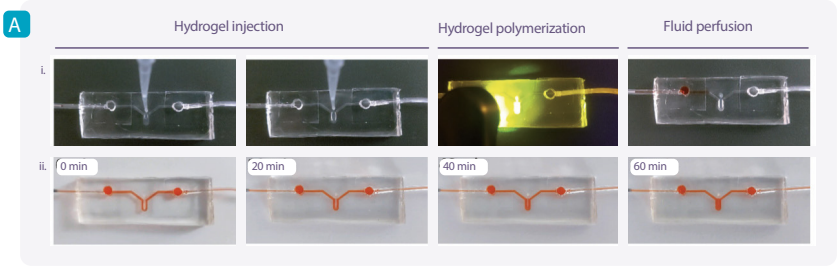


*DOI: 10.1002/smtd.202400857

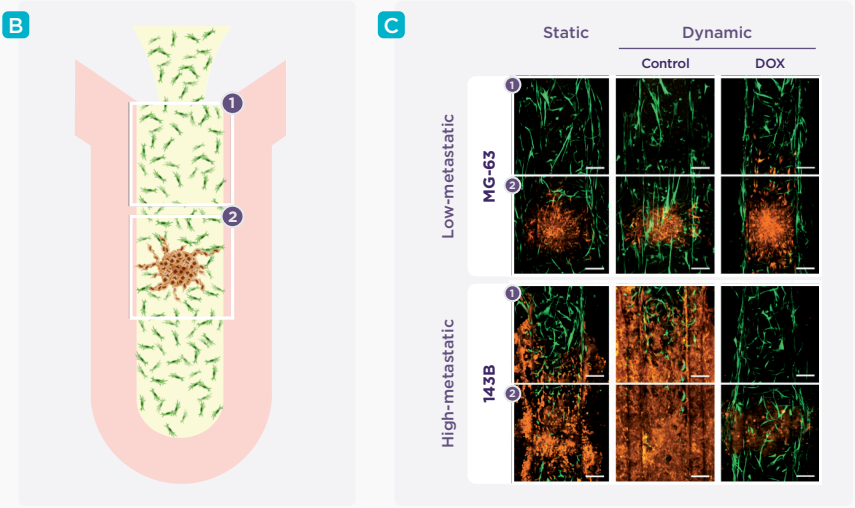
OoC

hPLMA in organ-on-a-chip

Designed for integration into Organ-on-a-Chip platforms, hPLMA hydrogels offer exceptional stability over time, more than 30 days, supporting prolonged cell culture and functional tissue modeling.



Validation of hPLMA hydrogel's ability to support tumour and stromal cell organization and direction in a 3D co-culture model.
(A) Injection of hPLMA solution into microfluidic devices with photopolymerization.



(B) Illustration of hPLMA inside a microfluidic device with encapsulated tumoral cells (orange) and stromal cells (green).
(C) Comparison of tumor model behavior in static and dynamic conditions, without and with, doxorubicin (DOX) treatment. Scale bar: 200 µm.

DOI:10.1002/adfm.202315940

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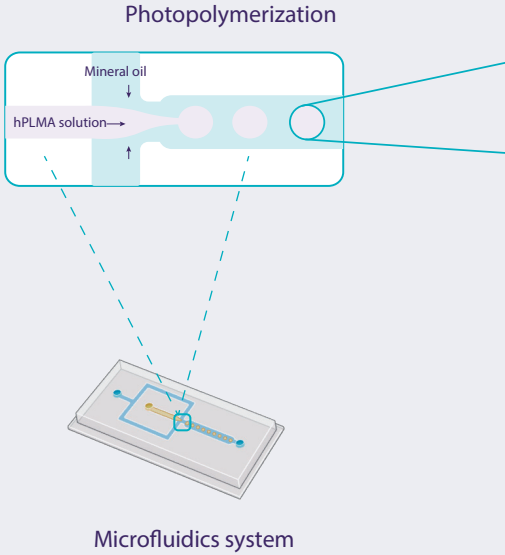
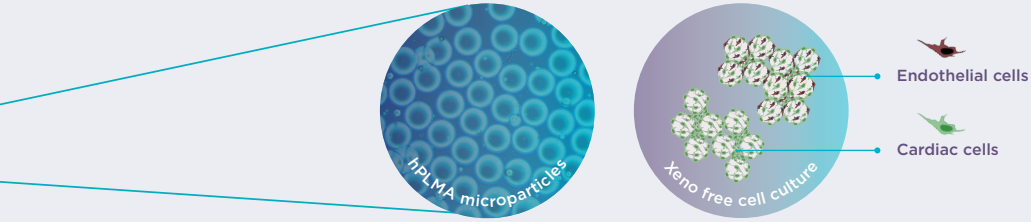
hPLMA Microparticles

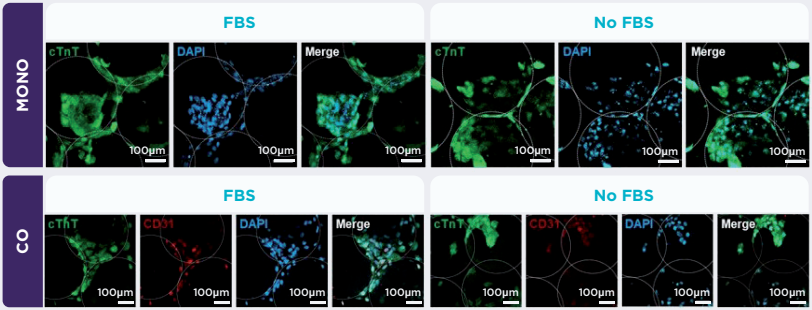
Bottom-up tissue engineering strategies

Cell viability and proliferation without supplementation

hPLMA microparticles serve as anchoring sites for cardiac and endothelial cells, enabling the development of injectable systems without the need for animal-derived serum supplementation in the culture media.







DOI:10.1039/D3BM01933K

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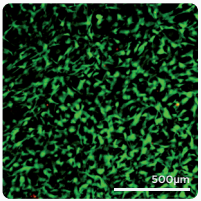
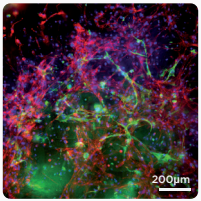
Validated Human Cells

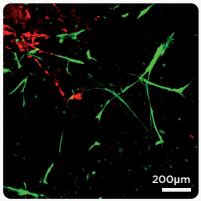
Cell encapsulation



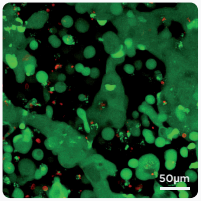
Human Adipose Stem Cells (hASC)



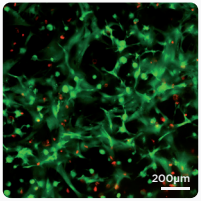
Human Adipose Stem Cells (hASC) + Human Umbilical Vein Endothelial Cells (HUVECs)



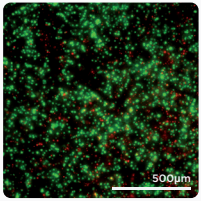
Bone Marrow-Mesenchimal Stem Cells (hBM-MSC)



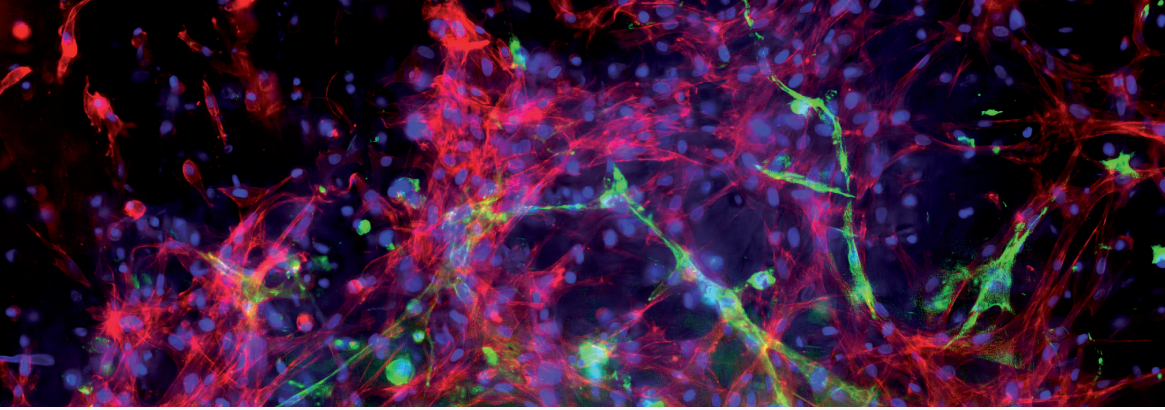
Human induced Pluripotent Stem Cells (hiPSC)-derived Cardiomyocytes (hiPSC-CMs)



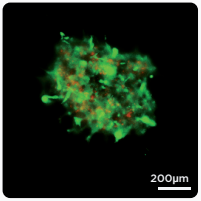
Human ladder Smooth Muscle Cells (hSMC)



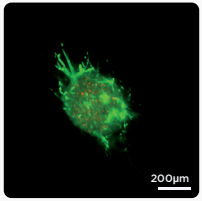
CnT Bladder Epithelium Progenitors (hBlak)



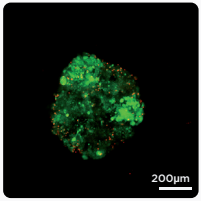
Spheroids encapsulation



Human osteosarcoma
cell line
(SaOS-2)



Human osteosarcoma
cell line
(MG-63)



Adenocarcinomic human
alveolar basal epithelial cells
(A549)

“
... THE GREATEST SCIENTIFIC EXPERIMENTS HAVE ALWAYS BEEN THE MOST HUMANE ...
”

W. Russell and R. Burch: The Principles
of Humane Experimental Technique, 1959

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