NEXT GENERATION BIOPRINTING

Single cells. Complex tissues.

FLEXIBILITY | PRECISION | AUTOMATION | BIOSAFETY

poietis
Biosystems

Four pillars , two systems
to meet the challenges in 3d bioprinting

Oncology, drug testing, and regenerative medicine share one critical challenge: faithfully reproducing the three-dimensional architecture, biochemical gradients, and multicellular interactions that govern tissue function in vivo

PILLAR 1

A platform that grows with your science
Built for every scale

MODULARITY & FLEXIBILITY

- Upgrade and complete when you need
- Multiple modules
  Multiple print heads
- Large compatibility of bio-inks
- Smooth transition from research to clinic
  NGB-R™ -> NGB-C™ seamless

PILLAR 2

Bioprinting at micro scale resolution
Single cell precision

RESOLUTION & PRECISION

- Laser assisted bioprinting
- Pickcell organoid printing
- Robotic arm precision
- In-line microscope for real-time control
- ViewPrint™ for targeted deposition

PILLAR 3

Process with advanced Robotics
Standardized Biofabrication

ROBOTIZATION & AUTOMATION

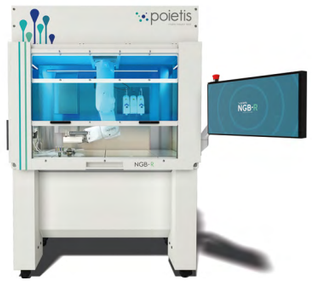
- 6-axis Robotic arm
- Workflow fully automated
- Large compatibility of print supports
- Zebr4D® CAD software

PILLAR 4

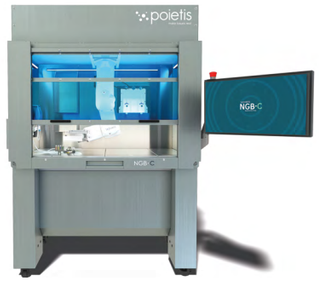
System ready for clinical transition

BIOSAFETY & COMPLIANCE

- Biosafety cabinet - Class II
  Laminar flow - STERILIZABLE
- Removable autoclavable accessories
- End-to-end traceability
- NGB-C™ GMP / ATMP



NGB-R™ for Research
Helps you explore a wide range of biofabrication strategies to improve the accuracy and reproducibility of your 3D culture models



NGB-C™ for GMP Manufacturing
Built on the same architecture as the NGB-R™, the NGB-C™ ensures a seamless continuum from research to clinical translation — fully GMP-compliant – Ideal for regenerative medicines

What can you expect to achieve?

Building blocks

Stem Cells
Cells
Organoids
Hydrogels

Targeted outcomes

3D Models
Organs-on-chips
Tissue Constructs
Single cell

Tissues & organs

Heart
Skin
Cornea
Liver
Lung
Cartilage
Neural tissue
Complex tissue

Disease Modeling

Oncology
Rare Diseases
Neuro Metabolism
Traumatic Surgery

Markets

Biopharma
Drug Screening
Basic Research
Regenerative Medicine
Cosmetics

Oncology & 3D Tumour Microenvironment Models

Structured TME models integrating tumour, stroma, immune compartments, and ECM mechanics — a more realistic test bed for immuno-oncology agents, biologics, and drug resistance studies than conventional multicellular spheroids.

Regenerative Medicine
First therapeutic bioprinted tissue

The first therapeutic bioprinted product reaching clinical translation. Autologous full-thickness skin substitute (40 cm²), manufactured on NGB-C™ under GMP-compatible conditions. Phase I/IIa trial ongoing — target: burn wounds, reconstructive surgery.

NGB-R™ — System overview

CABINET STRUCTURE

IMAGING & SOFTWARE

LAB SYSTEM

ROBOTICS & AUTOMATION

DISPENSING & EXTRUSION

LAB Head (LABPH)

kHz · 1000 drops/sec ·
pL–nL · nozzle-free
Single cell to ~50 cells per droplet

Microscope in-line (HRIM)

Resolution 2 µm · FOV 10×12 cm
Sterility-preserving QC ·
ViewPrint™ targeted printing

6-Axis Robotic Arm

±0.02 mm accuracy ·
speed control
Orchestration of all heads and modules

Micro-valve Head (MiVALV)

Solenoid valve · fixed size
Low-viscosity liquids ·
precise dispensing

Microfluidic System (MiFLU)

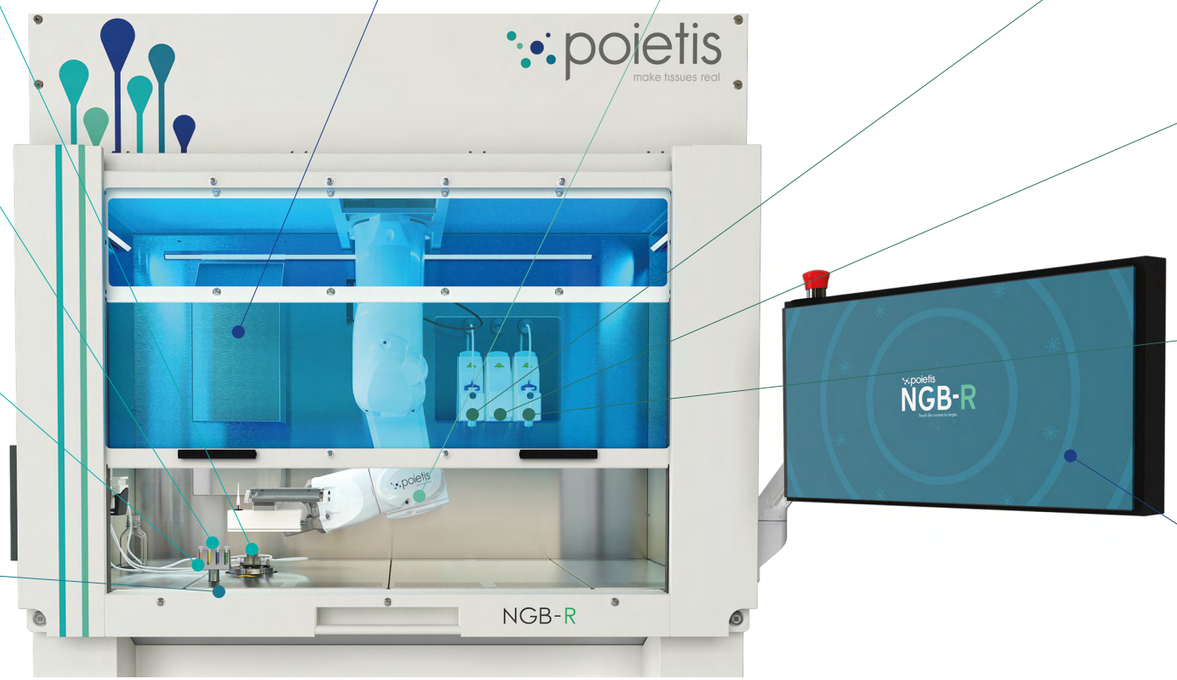
3 bioink reservoirs + 1 cleaning
±1 µL deposition
Automated multi-bioink LAB

PickCell™ Module

Spheroids & organoids 50–300 µm
AI detection ·
on-demand picking

Class II BSC

700×1200×635 mm (H×W×D)
Autoclavable stainless steel
Vertical laminar flow



Photocrosslinking Head (UVLP)

365 nm & 405 nm · dual wavelength
UV-crosslinkable bioinks (GelMA, PEGDA…)

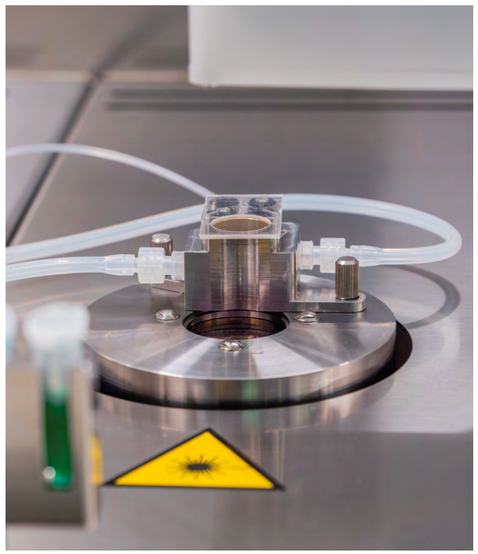
Pneumatic Extrusion Head (TREPH)

4–60°C · 3/5/10 mL cartridges
Viscous hydrogels ·
optional 2nd head

22» Screen + AI PC with NPU

Touchscreen interface
NGB HMI for setting parameters
Zebr4D® for tissue CAD

High value modules



Laser-Assisted Bioprinting or LAB

• No nozzle. No shear stress.
• LAB is based on laser-induced forward transfer (LIFT).
• A pulsed laser propels picoliter-to-nanoliter droplets from a gold-coated donor slide to the receiver — with zero mechanical contact and no constricted channel.

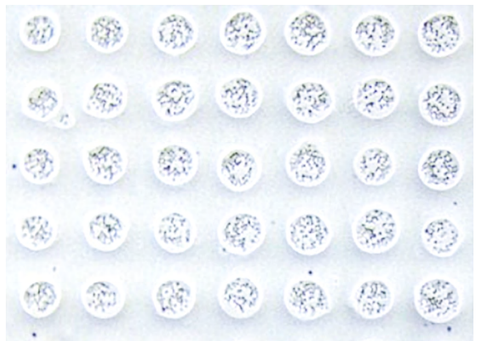
PickCell™ — for spheroids & organoids

AI-powered module combining image recognition and LAB for on-demand picking and placement of 50–300 µm cell aggregates (organoids, spheroids, micro-tissues) into complex 3D constructs.

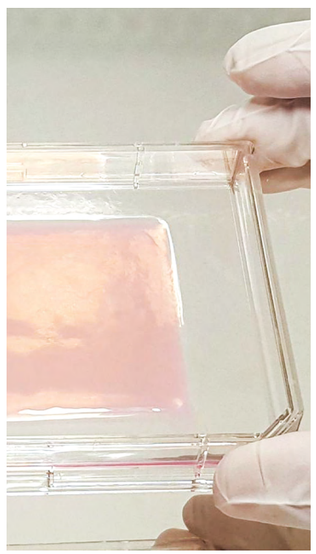
In-line Microscope

Integrated microscopy for in-process monitoring, with 2µm resolution and 10×12mm FOV, the in-line microscope enables to image cell patterns without taking bioprinted tissues out of the Biosafety Cabinet

ViewPrint software™ enables to bioprint on user-defined positions on substrates.



Expanding knowledge



20+ years of R&D

LAB technology originated at INSERM and the University of Bordeaux. The underlying science is peer-reviewed, publicly documented, and protected by a growing patent portfolio across Europe, the US, China, Korea, and Japan.

30+ peer-reviewed publications

From foundational physical parameters (2010–2011) to clinical-grade manufacturing of implantable skin substitutes (2023), the scientific track record spans skin, bone, liver, cartilage, vascular, retinal, and cardiac tissues.

Poieskin® — First therapeutic bioprinted tissue

Autologous dermo-epidermal skin substitute. 40 cm². Manufactured under GMP-compatible conditions.
Phase I/IIa clinical trial (BIOPSKIN) in progress at AP-HM, Marseille.

Selected Publications

Vasilopoulou et al. 2026	Biofabrication	CARTILAGE	Converging laser-induced forward transfer and melt electrowriting for biofabrication of reinforced cartilage constructs.
Bosmans et al. 2025	Adv. Healthcare Mater.	VASCULAR	A quantitative printability framework for programmable assembly of pre-vascular patterns via laser-induced forward transfer
Hall et al. 2024	Biofabrication	CARTILAGE	Laser-assisted bioprinting of targeted cartilaginous spheroids for high-density bottom-up tissue engineering
Abellán Lopez et al. 2023	Front. Bioeng. Biotech.	SKIN	In vivo proof of concept of a large-size bioprinted dermo-epidermal substitute for permanent wound coverage
Douillet et al. 2022	Biofabrication	SKIN	From local to global matrix organization by fibroblasts: a 4D laser-assisted bioprinting approach.
Kérourédan et al. 2019	Biofabrication	BONE	Micropatterning of endothelial cells to create a capillary-like network with defined architecture by laser-assisted bioprinting
Kériquel et al. 2017	Scientific Reports	BONE	In situ printing of mesenchymal stromal cells, by laser-assisted bioprinting, for in vivo bone regeneration applications
Guillemot / Guillotin et al. 2010–2013	Acta Biomater. Biomaterials	FOUNDATIONS	Laser assisted bioprinting of engineered tissue with high cell density and microscale organization
Keriquel et al. 2010	Biofabrication	IN VIVO	In vivo bioprinting for computer- and robotic-assisted medical intervention: preliminary study in mice
Guillemot et al. 2010	Nanomedicine	FOUNDATIONS	Laser-assisted cell printing: principle, physical parameters versus cell fate and perspectives in tissue engineering

MORE THAN ACQUIRING A BIOPRINTER
YOU ARE ***SECURING*** A BIOPRINTING
CAPABILITY THAT CAN GROW WITH

YOUR *PROJECTS*
YOUR *DISCOVERIES*
YOUR *REGULATORY AMBITION*

Discover how the NGB platform can accelerate your bio- fabrication projects from your first prototype to clinical-grade manufacturing and request more information by contacting us.

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