

# NATUREMATRIX

Xeno-free hydrogel for cell culture

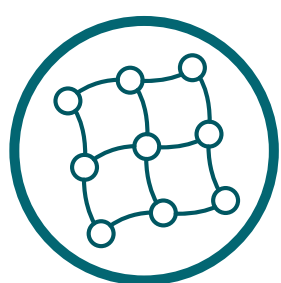


**MosaMatrix**

**NatureMatrix** is the first animal-free dynamic hydrogel designed for 2D and 3D cell-culturing. Its tunable stiffness and stress-relaxation properties closely mimic the natural extracellular environment, supporting optimal cell growth. Engineered for easy handling, NatureMatrix is bioprintable, transparent, and ideal for sensitive cells and tissue maturation. NatureMatrix unlocks new possibilities in organoid culture, drug discovery, and regenerative medicine.



**Animal-free and easy-to-use**



**First dynamic hydrogel**



**Addition of biofunctional peptides**



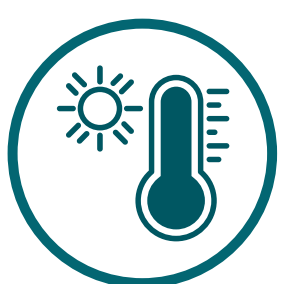
**Tunable stiffness and stress relaxation**



**Easy cell harvesting**



**Transparent**



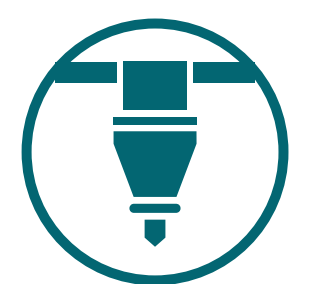
**No temperature or UV needed**



**Self healing**



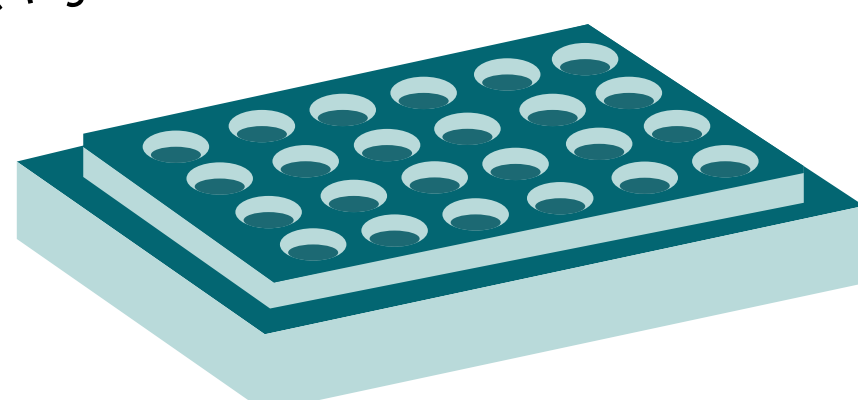
**Automation friendly**



**Bioprinting**

**NatureMatrix** is already featured in publications across diverse cell lines, with new studies emerging rapidly. Through our XplorePlate platform, we help customers identify the optimal biomaterial and support efficient experimental setup. Looking beyond conventional 3D cell culture, we envision our biomaterials playing a key role in high-throughput systems, bioprinted constructs, and next-generation cell therapy solutions.

**Try our Xplore Plate!**  
Our starter kit to quickly identify the best hydrogel for you!

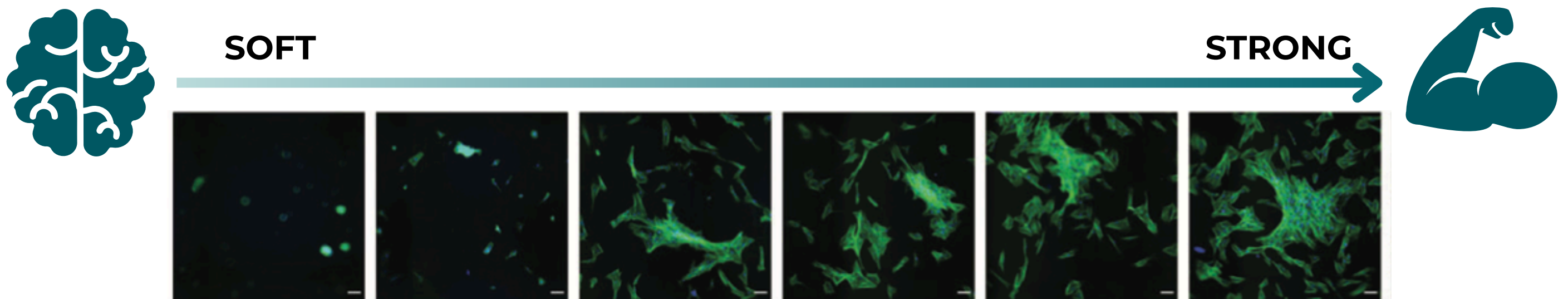


# Validation

## Human Dermal Fibroblast

### Stiffness and stress relaxation influence dramatic differences in cell behavior

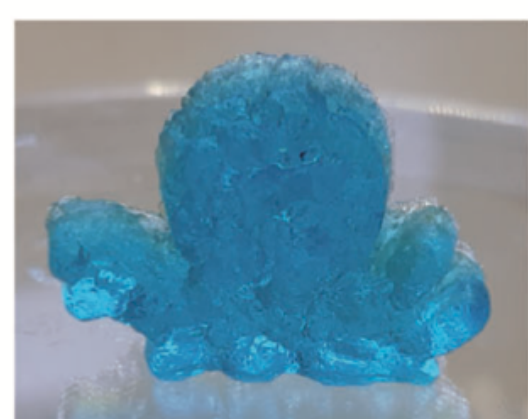
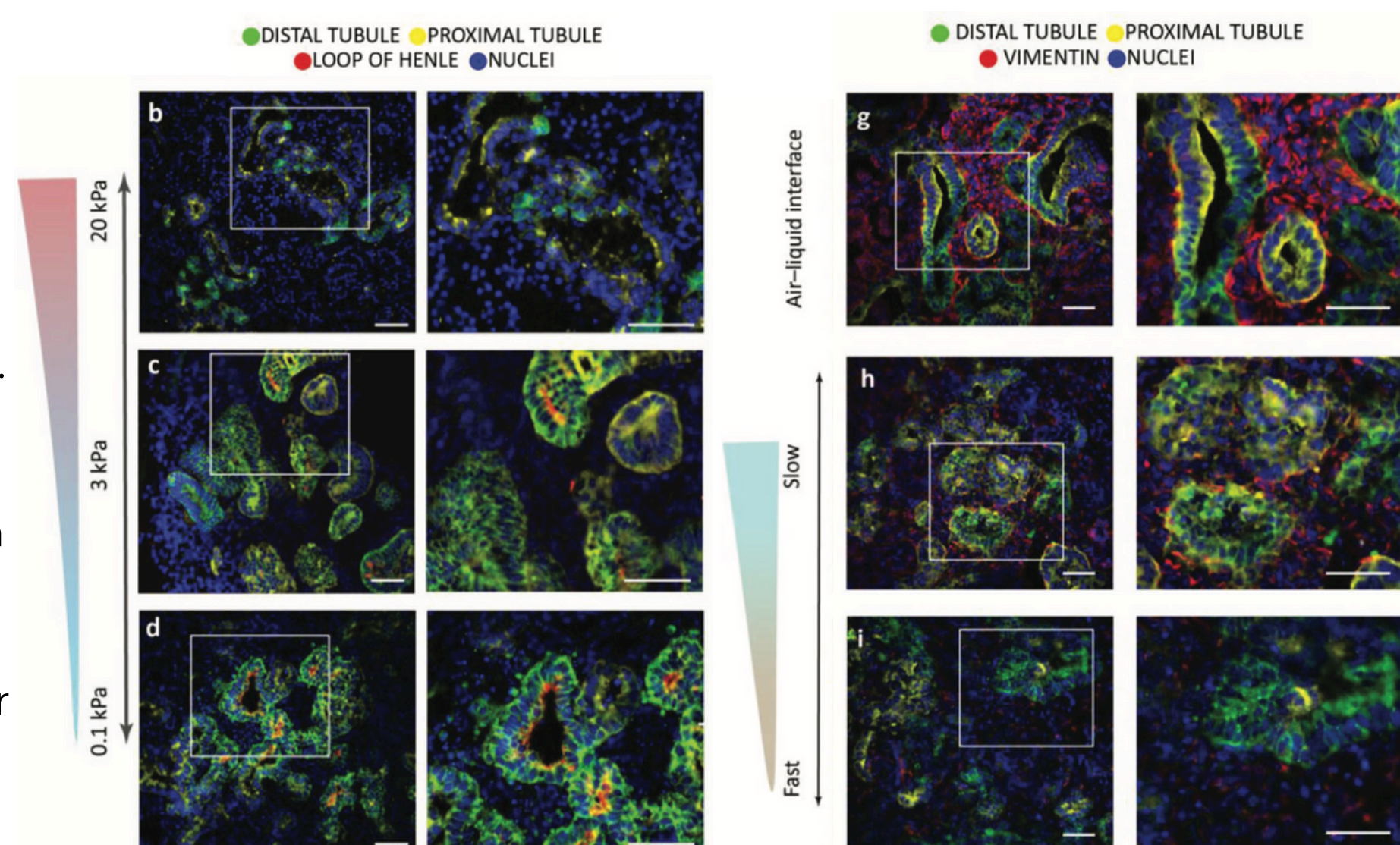
**Figure 1.** HDFs responded to the gradient of mechanical properties present in NatureMatrix formulations in 2D. HDFs show increased spreading and cell area on hydrogels with slower stress relaxation but remain rounded on fast relaxing hydrogels.



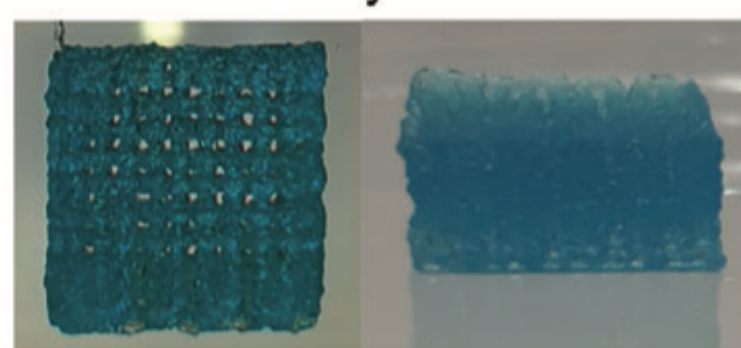
## Kidney organoid

### Soft and dynamic hydrogels improve organoid morphology

**Figure 2.** Kidney organoids developed in all dynamic hydrogels, but a subset of renal cell types are absent in stiffer (20 kPa) hydrogels. Soft and fast-relaxing dynamic hydrogels leads to all major renal segments, fewer fibrosis or epithelial-mesenchymal transition associated proteins, apical proximal tubule polarization, and primary cilia formation, representing a significant improvement over current approaches to culture kidney organoids.



Print 16-layer scaffold

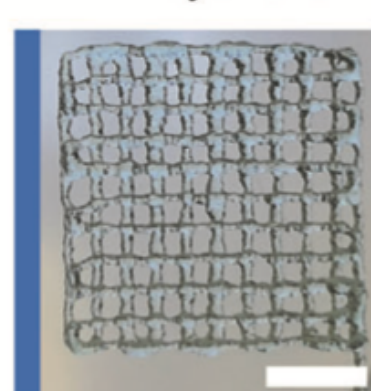


## 3D Bioprinting

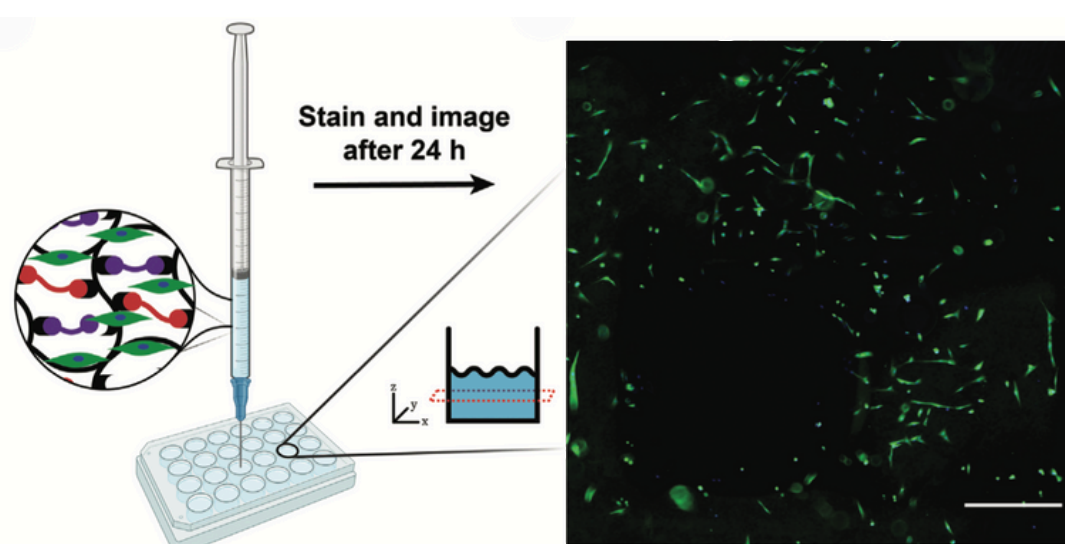
### NatureMatrix used in high end applications

**Figure 3.** Printability and injectability. The dynamic properties of NatureMatrix allow the hydrogel to be used in 3D bioprinting (top left: 3D octopus, top right: layered scaffold). We were able to print 16 layers of the grid pattern and retain the porosity of the printed scaffold. The shear thinning behavior also ensures cell survival in 3D bioprinted constructs (human dermal fibroblast).

2-Layer Grid



Scale bars = 5 mm



## Key Publications

<https://advanced.onlinelibrary.wiley.com/doi/10.1002/adhm.202101576>

<https://advanced.onlinelibrary.wiley.com/doi/full/10.1002/advs.202200543>

