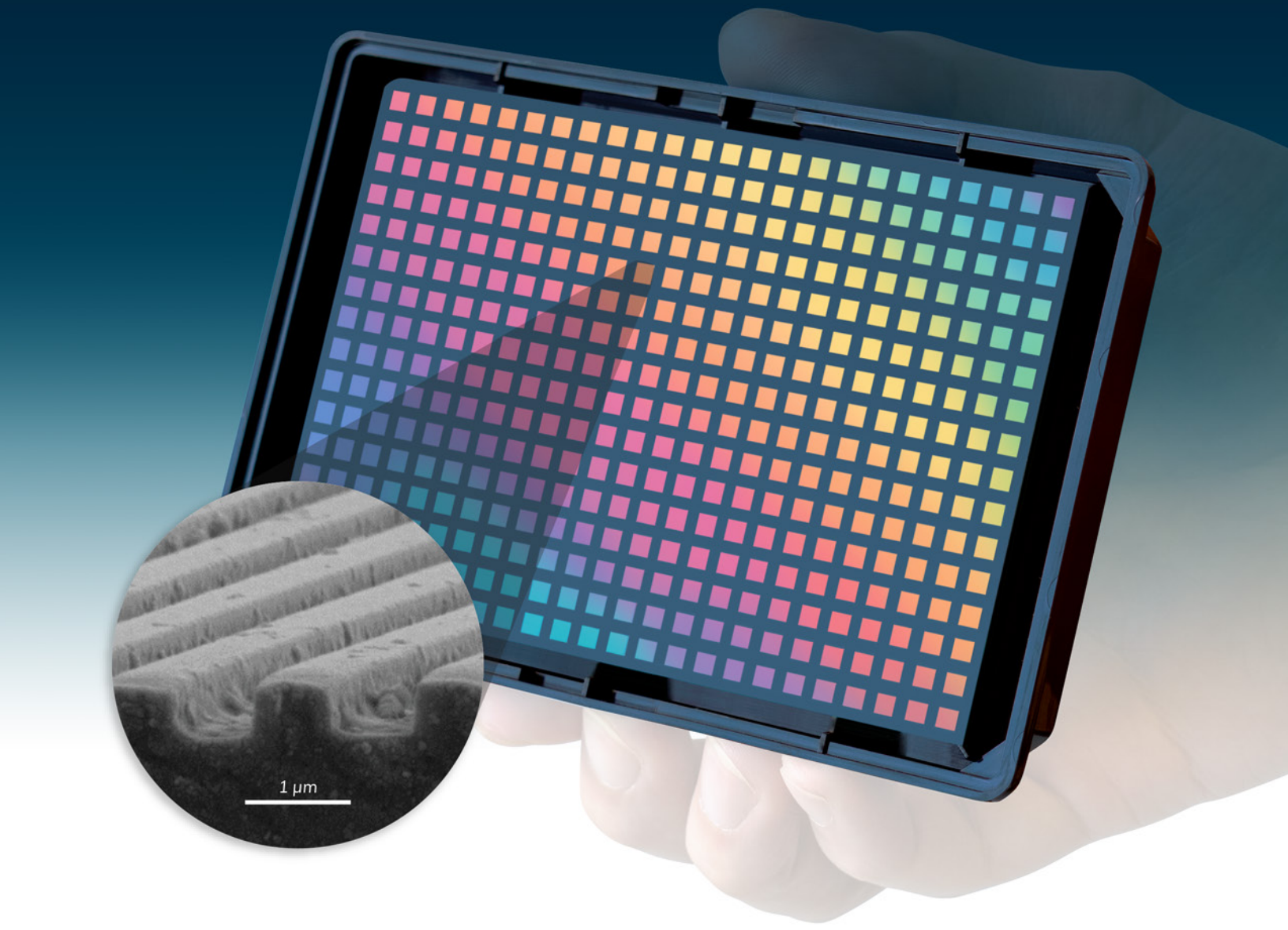
# NanoSurface Plates




Nanoscale Topography Promotes
Physiological Structure and Function

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# Recapitulate the Extracellular Matrix Using NanoSurface Plates

## Nanoscale topography mimics the aligned architecture of the ECM.

NanoSurface Plates provide your cells and tissues a submicron biomimetic surface to improve the physiological relevance of your experiments. Shortly after plating, cells cultured on NanoSurface Plates exhibit enhanced structural and phenotypic development when compared to cells grown on conventional dishes. NanoSurface topography promotes cytoskeletal reorganization, cellular alignment, and functional development. NanoSurface Plates are available in familiar standard formats, featuring glass-bottom wells for high-quality imaging.

NanoSurface Plates promote the structural and phenotypic development of many cell types:

- Skeletal muscle cells
- Smooth muscle cells
- Neuronal cells
- Cardiomyocytes
- Endothelial cells
- Epithelial cells
- Fibroblasts
- Cancer cells
- Induced pluripotent stem cells
- Mesenchymal stem cells
- Human embryonic stem cells
- And many more

## NanoSurface Plate Benefits

### Reproducibly Structured Cell Cultures

Highly uniform, precise, and accurate nanopatterns ensure that your results are consistent from plate to plate.

### High-Quality Imaging

Compatible with high-magnification, high-NA transmitted light and fluorescence microscopy techniques. No spectral loss across commonly used fluorophores.

### Industry Standard Culture Formats

NanoSurface Plates come in a variety of ANSI/SLAS compliant form factors to guarantee compatibility with existing instrumentation and hardware.

## Conventional Cultureware vs. NanoSurface Plates

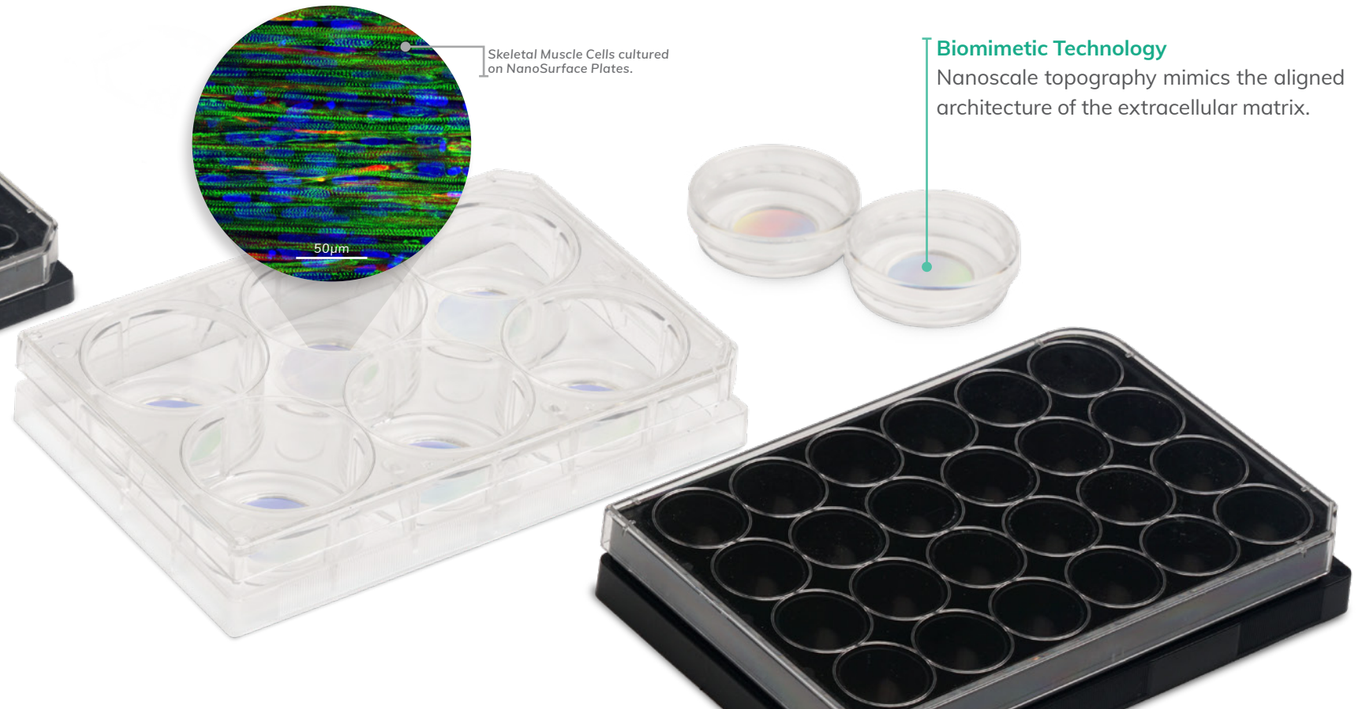
**Conventional Cultureware** does not utilize biomimetic surface topography, which results in random structural orientation. The disorganized isotropic cell and tissue architectures result in immature functional phenotypes that do not reproduce in vivo function. These inaccuracies lead to imprecise, hard-to-reproduce results and wasted time and effort.

**NanoSurface Plates** feature a submicron nanopatterned culture surface which provides a cellular microenvironment that mimics the aligned architecture of the native extracellular matrix – improving physiological relevance by promoting development. Cells can align, elongate, grow, and migrate along the pattern while exhibiting more physiologically representative structural and functional phenotypes.

## Product Specifications

| Product Type | Product Code | Approximate Pattern Growth Area ($cm^2$) | Total Well Volume (µL) | Working Volume (µL) |
|---|---|---|---|---|
| 12 mm Coverglass | ANFS-CS12 | 1.13 | – | – |
| 25 mm Coverglass | ANFS-CS25 | 4.90 | – | – |
| 35 mm Single Dish | ANFS-0001 | 3.14 | 17,000 | 3,000 |
| 6-well Plate* | ANFS-0006 | 3.14 | 17,000 | 3,000 |
| 24-well Plate* | ANFS-0024 | 1.65 | 3,400 | 1,000 |
| 96-well Plate* | ANFS-0096 | 0.33 | 360 | 200 |
| 384-well Plate* | ANFS-0384 | 0.081 | 133 | 15–110 |

*All numbers approximate and subject to revision.*
**ANSI/SLAS compliant.*

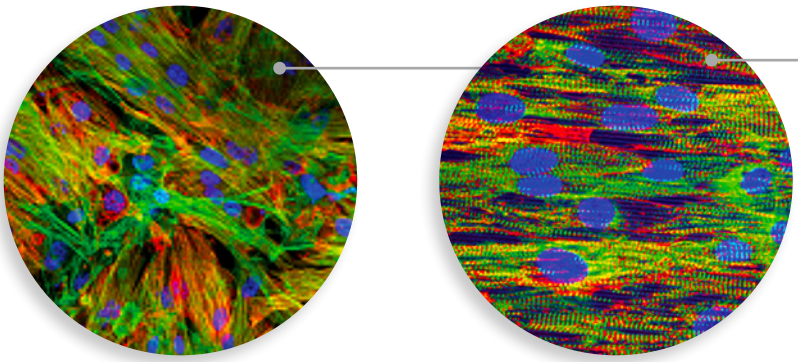



### Biomimetic Technology

Nanoscale topography mimics the aligned architecture of the extracellular matrix.

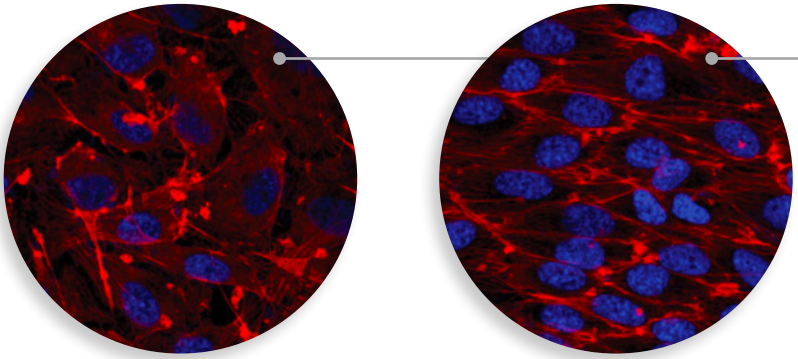
Conventional Cultureware

NanoSurface Plates



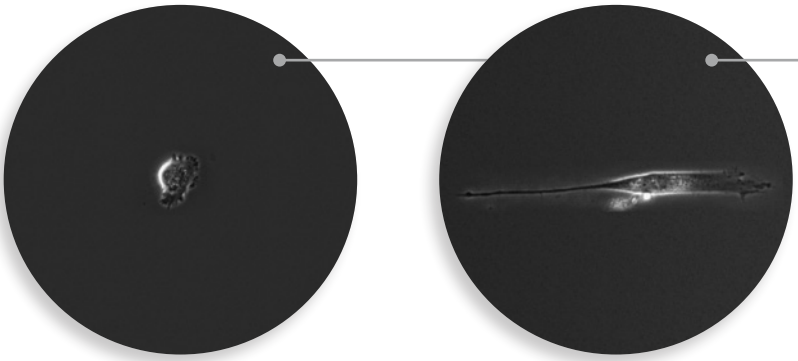
## Cardiomyocyte Cells

CDI iCell cardiomyocytes on a conventional dish (left) vs. NanoSurface Plates (right). Cardiomyocytes elongate in the direction of the nanopattern, develop structurally organized cytoskeletal networks, anisotropic cell shapes, striated and physiologically-spaced sarcomeres, and exhibit polarized expression of gap junction proteins. These and other changes lead to more physiological and mature electrical and mechanical properties, such as faster action potential conduction in the direction of the nanopattern, and improved contraction force and velocity.



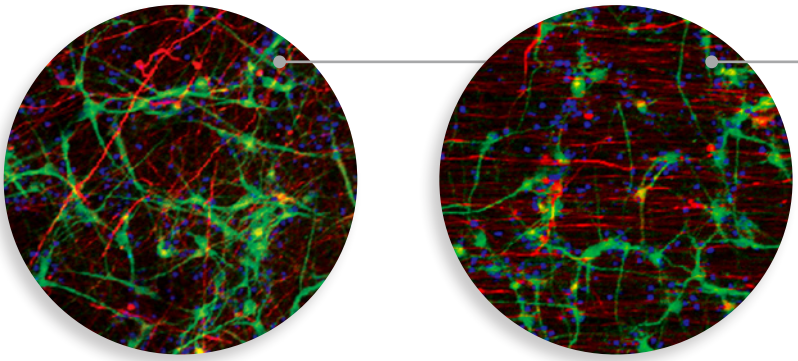
## Endothelial Cells

Endothelial cells on a conventional dish (left) vs. NanoSurface Plates (right). Endothelial cells form aligned layers with physiological anisotropy, and exhibit lower expression of inflammatory cytokines.



## Cancer Cells – Glioblastoma

Directed migration of cancer cells on a conventional dish (left) vs. NanoSurface Plates (right). Glioblastoma cells grown on traditional flat cultureware lose their migratory phenotype in culture, while cells grown on patterned dishes maintain it, with migration directed along the length of the pattern. Images from Smith et. al. Cell Reports 15(12):2016.



## Neuron Cells

Two-channel confocal image of CDI cortical neurons cultured on a conventional dish (left) vs. NanoSurface Plates (right). On NanoSurface Plates, neurofilaments (red) align along the direction of the nano-topography while dendrites (MAP2 stain; green) do not.

NanoSurface Plates benefit many cell types, including cardiomyocytes, skeletal and smooth muscle cells, endothelial cells, undifferentiated stem cells, cancer cells, fibroblasts, epithelial cells, and many more.

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