InvivoSciences, Inc.

Discovery with a Human Touch

Microscopic Examination of 3D Tissue Constructs

Application:

Conduct live examinations of cellular and three-dimensional (3D) tissue construct morphology. Specific cellular markers can be visualized in tissue constructs if they are labeled with fluorescent indicators. 3D tissues in a Mini-Construct Chamber™ (MC-8™) can be examined on an inverted microscope with a 10× objective. The tissues can then be removed from their chambers for further examination using confocal microscopy.

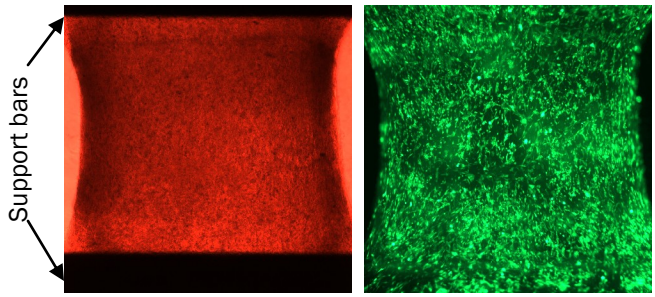
Introduction:

Microscopic examination of cell morphology is a necessary tool for studying cell behavior and physiology. With the appropriate indicators, the distribution and localization of particular cellular components can also be visualized, quantified, and monitored. Our patented 3D tissue culture chambers (MC-8™) are equipped with an open top and transparent bottom to enable phase and fluorescent microscopic examination of tissues. This is a critical feature for cell research since the morphology and physiology of cells grown in a 3D matrix are more similar to those of cells *in vivo*.

Technical Advantages:

- Study the morphology and physiology of cells grown in a more natural three-dimensional (3D) environment
- Track cells and intracellular components in real time using phase and fluorescent microscopy
- Correlate cell morphology and cytoskeletal integrity to cellular and 3D tissue contractility and stiffness by our Palpator™ technology

Inverted microscopy (4x objective):

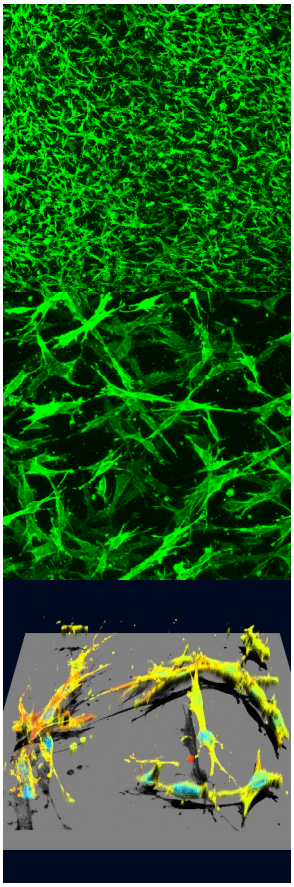


Phase | GFP expressing cells

Confocal microscopy:

10x air objective
Cells labeled with anti-vimentin antibody conjugated with Alexa-488™

40x air objective
Cells labeled with anti-vimentin antibody conjugated with Alexa-488™



63x water immersion objective
3D volume rendering of a cell layer labeled with anti-vimentin antibody—Alexa-488™ (Green), phalloidin—Alexa-568™ (Red), and DAPI (Blue)

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