

## Heating & Incubation Systems for Live Cell Imaging

The Plug-and-Use Solution for All Microscopes

✓ **Ideal for live cell imaging applications**

Full incubator conditions right on the microscope

✓ **Excellent illumination of the sample**

No condensation due to heated lid  
Optimal magnetic sample stabilization  
Suitable for DIC

✓ **Compatible with all microscopy platforms**

Fits every inverted microscope

✓ **Flexible**

Suitable for all ibidi  $\mu$ -Slides, ibidi  $\mu$ -Dishes, multi-well plates, and non-ibidi formats

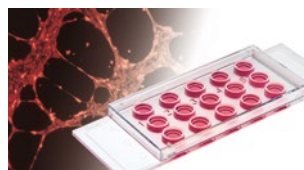
✓ **Low costs**

Attractive pricing for complete systems

### Applications:



Chemotaxis



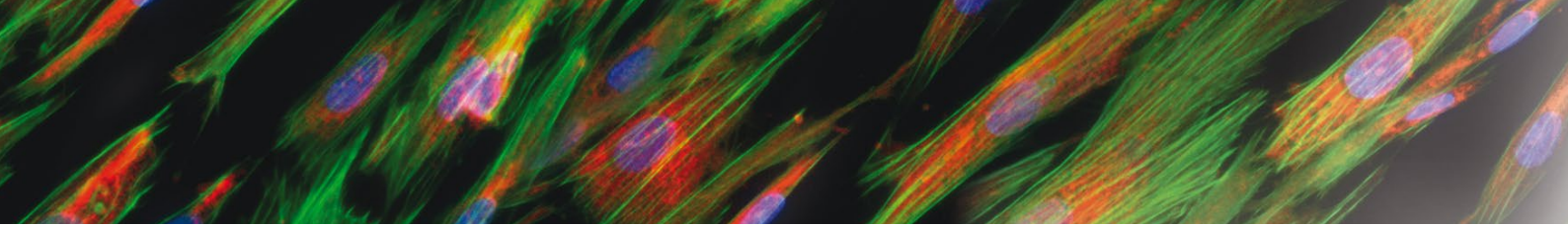
Angiogenesis



Migration & Wound Healing



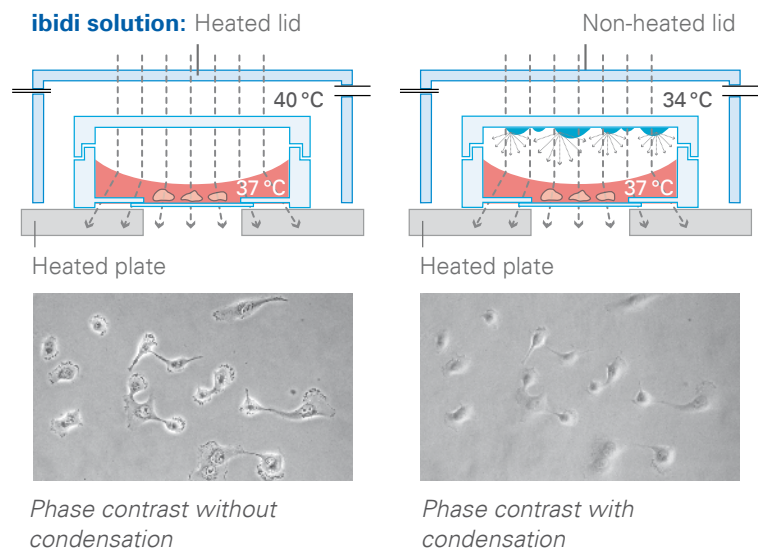
Cell Culture under Flow



## Heating Stages for Live Cell Imaging

The independently controlled, heated glass lid of the ibidi Heating & Incubation Systems solves the problem of condensation developing in live cell imaging.

By heating the lid to a temperature higher than the plate, a vertical temperature gradient is created. This gradient and an active humidity control prevent the formation of condensation on the lid of the Petri dish. The temperature at the cells' site is maintained at a constant 37 °C.



## ibidi Temperature Controller

- Accurate and precise heating – provides excellent temperature stability within the incubation chamber
- Four control channels allow to connect a heated plate, a heated lid, and two additional heated components (e.g., an objective heater)



Temperature stability	± 0.05 °C
Temperature uniformity across the insert	± 0.5 °C
Temperature range	Room temperature - 45 °C
Control channels	4

TempControl software for remote control and data recording	Included
External temperature sensor	Included
Adjustable alarm function	Included
Analog output for extreme noise reduction	Optional

## ibidi Gas Incubation System

- Precise and reliable gas incubation for O<sub>2</sub> and CO<sub>2</sub>
- Active and fast humidification - no evaporation
- Uses pressurized air to create the gas flow – no vibrations
- Optional air pressure generator available (for when pressurized air is not obtainable)



### CO<sub>2</sub> Control

CO <sub>2</sub> Control Range	0.1 % - 20 %
Accuracy	0.1 % - 0.5 % (absolute)

### O<sub>2</sub> Control

O <sub>2</sub> Control Range	0.5 % - 21 %
Accuracy	0.5 % (absolute)

### Humidity Control

Control Range	20 % - 99 % (Rel. Humidity)
Accuracy	1 % (absolute)

### Gas Flow

Control Range	5 - 20 l/h
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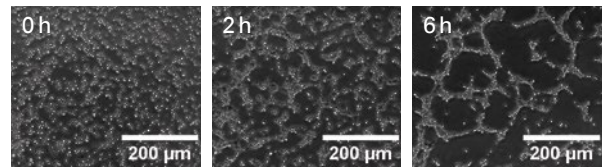
# Heating & Incubation Systems for Live Cell Imaging

The Plug-and-Use Solution for All Microscopes

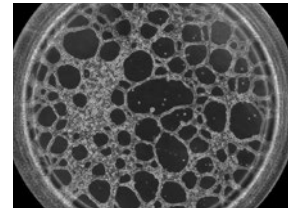
## Experimental Examples

### Investigation of Tube Formation in Angiogenesis Research

Microscopy is used to investigate the tube formation process. Depending on the focus of interest, this can either be done by using video microscopy (a continuous movie), or by observing images at distinct time points. The ibidi Heating & Incubation Systems provides excellent temperature stability within the incubation chamber during the whole experiment.

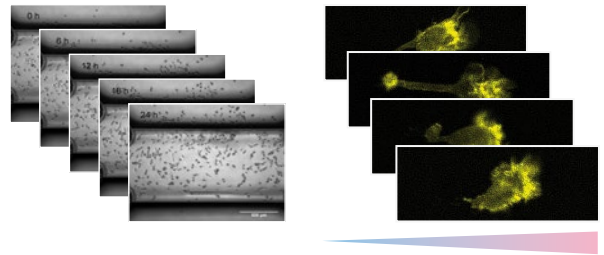


*One well of the  $\mu$ -Slide Angiogenesis, with HUVEC cells on Matrigel™ after 24 hours of incubation. The tube formation network is built up over the whole gel surface.*



### 2D and 3D Chemotaxis Experiments

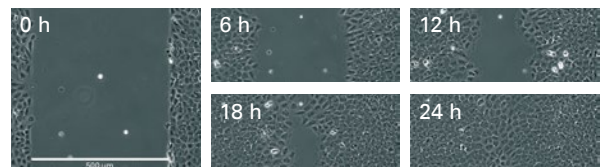
For chemotaxis assays in 2D or 3D environment, video microscopy of living cells for up to 48 hours is necessary. The ibidi Heating & Incubation System offers full incubator conditions right on the microscope. The smooth temperature regulation avoids focus drift at high magnification.



*Migration of a dendritic cell in a chemotactical gradient.*

### Migration and Proliferation Assays

Wound healing and migration behavior of cells and mutants can easily be investigated when working with ibidi's Culture-Inserts. Microscopy with incubation of the cells using the ibidi Heating & Incubation System is perfectly suited to evaluate the wound healing process.



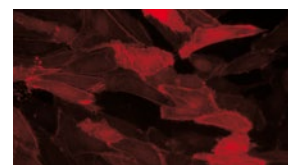
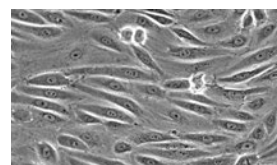
*Closure of cell-free gap in an ibidi Culture-Insert. Images were observed at distinct time points.*

### Live Cell Imaging under Flow Conditions

The ibidi Heating & Incubation System can be adapted for live cell imaging under flow conditions. Connect the ibidi Pump System to an adapted heated plate and heated lid to receive the perfect environment for long-term cell studies (several days) under flow conditions.



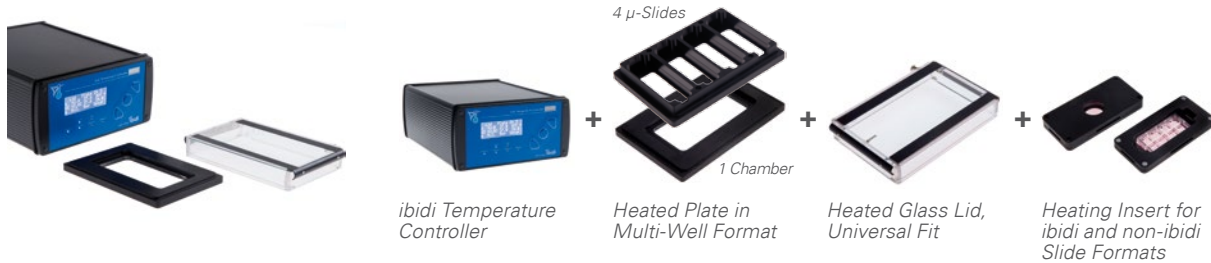
*Human umbilical vein endothelial cells (HUVEC) cultured under flow conditions (20 dyn/cm<sup>2</sup>) in a  $\mu$ -Slide I<sup>0.4</sup> Luer over 9 days. The primary cells were transduced with the adenoviral vector rAV<sup>CMV</sup>-LifeAct-TagRFP 24 hours prior to the experiment.*



# Heating & Incubation Systems for Live Cell Imaging

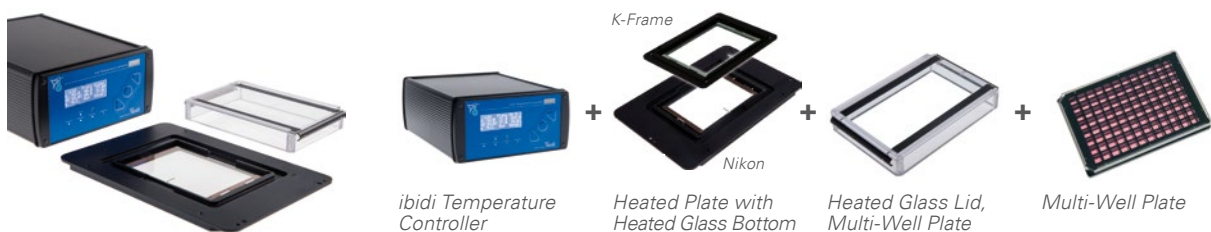
The Plug-and-Use Solution for All Microscopes

## Heating System, Universal Fit – Compatible for all inverted microscopes



Heating System,  
Universal Fit

## Heating System, Multi-Well Plates – A customized system for K-Frame Stages (160 mm x 110 mm) or the Nikon TI-S-E and TI-S-ER Motorized Stage which hold multi-well plates (for low magnification only)



Heating System,  
Multi-Well Plates

## ibidi Gas Incubation System for CO<sub>2</sub> and O<sub>2</sub> – Suitable for various experimental conditions (e.g., pH or hypoxia)



**ibidi MOVIE**

View example application movies on [www.ibidi.com/support/movies](http://www.ibidi.com/support/movies)

Gas Incubation System

### Heating System, Universal Fit

Cat. No.	Description
10918	ibidi Heating System, Universal Fit, for 1 Chamber: ibidi Temperature Controller, Heated Plate in Multi-Well Format for 1 Chamber, 1 Heating Insert, <b>with Heated Lid</b> (for use with CO <sub>2</sub> and humidity)
10915	ibidi Heating System, Universal Fit, for 1 Chamber: ibidi Temperature Controller, Heated Plate in Multi-Well Format for 1 Chamber, 1 Heating Insert, <b>without Heated Lid</b> (Heating only)
10927	ibidi Heating System, Universal Fit, for 4 $\mu$ -Slides: ibidi Temperature Controller, Heated Plate in Multi-Well Format for 4 $\mu$ -Slides, <b>with Heated Lid</b> (for use with CO <sub>2</sub> and humidity)
10928	Heated Plate in Multi-Well Format for 4 $\mu$ -Slides
10933	Heating Insert $\mu$ -Slide for ibidi Heating System, Universal Fit: insert for all ibidi $\mu$ -Slides
10932	Heating Insert $\mu$ -Dish <sup>35 mm, low</sup> for ibidi Heating System, Universal Fit: insert for $\mu$ -Dish <sup>35 mm, low</sup>
10934	Heating Insert $\mu$ -Dish <sup>35 mm, high</sup> for ibidi Heating System, Universal Fit: insert for $\mu$ -Dish <sup>35 mm, high</sup>
10937	Heating Insert LabTek for ibidi Heating System, Universal Fit: insert for Labtek™ / Labtek™ II chambered coverglass
10936	Heating Insert Adapter for perfusion assays

### Heating System, Multi-Well Plates

Cat. No.	Description
10926	ibidi Heating System, Multi-Well Plates on a Nikon Ti-S-E or Ti-S-ER Motorized Stage: ibidi Temperature Controller, Heated Plate for Multi-Well Format, Heated Lid, for Nikon Ti-S-E and Ti-S-ER Motorized Stage
10929	ibidi Heating System, Multi-Well Plates, K-Frame: ibidi Temperature Controller, Heated Plate for Multi-Well Format, Heated Lid, for K-Frame Stage (160mm x 110mm)

### Gas Incubation Systems

Cat. No.	Description
11920	ibidi Gas Incubation System for CO <sub>2</sub> : ibidi CO <sub>2</sub> Gas Mixer, Humidifying Column
11922	ibidi Gas Incubation System for CO <sub>2</sub> and O <sub>2</sub> : ibidi CO <sub>2</sub> and O <sub>2</sub> Gas Mixer, Humidifying Column
11929	Air Pressure Generator, 1 bar, ready to use with the ibidi Gas Incubation System

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