



The ibidi product family comprises a variety of different shapes of μ-Slides, μ-Dishes and plates which all have been designed for high-end microscopic analysis of fixed or living cells. The high optical quality of the material is similar to that of glass, so you can perform all kinds of fluorescence experiments with uncompromised resolution and choice of wavelength. The μ-Slide Angiogenesis is a cell culture product for angiogenesis assays and direct cell culture. Cells can be grown on gel matrices, e.g. collagen gels, hyaluronic gels or BD Matrigel™ (Becton-Dickinson) or directly on the ibidi coverslip-like plastic bottom.

Material

The μ-Slides consist of a plastic with highest optical quality. The material exhibits extremely low birefringence and autofluorescence, both similar to that of glass. It is not possible to detach the bottom from the slide. The μ-Slides are not autoclavable since they are temperature stable up to 60°C/140°F only. Please note that gas exchange between the channel and incubator's atmosphere occurs partially through the plastic bottom which should not be covered. Thus, it is recommended to place the μ-Slide on an ibidi μ-Slide rack which can be purchased from your local distributor.

Geometry of the μ-Slide Angiogenesis	
Number of wells	15
Volume inner well	10 μl
Diameter inner well	4 mm
Depth inner well	0.8 mm
Volume upper well	50 μl
Diameter upper well	5 mm
Growth area inner well	0.12 cm ²
Coating area using 10 μl	0.23 cm ²
Bottom matches coverslip	No. 1.5

μ-Slide surfaces

The μ-Slide Angiogenesis is available with ibiTreat and the uncoated surface. The ibiTreat surface is a physical treatment and optimized for adhesion of most cell types. Many cell lines as well as primary cells were tested for good cell growth. Uncoated is a very hydrophobic surface and allows no direct cell growth. If, for any reason, you might need special coatings such as Collagen IV, Fibronectin, Poly-L-Lysine, and Poly-D-Lysine these can be provided on request. In this case only high quality substrates are used¹.

A detailed protocol for applying gel matrices is provided in the section Coating your μ-Slide Angiogenesis.

Geometry of the μ-Slide Angiogenesis

The μ-Slide Angiogenesis provides standard slide format according to ISO 8037/1. The lateral well to well distance of 9 mm (like 96 well plates) allows using multichannel pipettes.

Coating your μ-Slide Angiogenesis

The uncoated μ-Slide must be coated to promote cell adhesion. If you like to establish a certain coating for your demands we recommend to test your coating procedure on uncoated and ibiTreat μ-Slides, since we have observed that some biomolecules adhere differently to hydrophobic or hydrophilic plastic surfaces.

- Prepare your gel matrix according to the manufacturer's protocol or reference.
- Fill the inner well with 10 μl liquid gel. Avoid air bubbles.
- Let the gel polymerize under appropriate conditions.
- Use as soon as possible.
- If storage is needed fill sterile water around the wells to generate a humidified environment to hinder evaporation.

Non-gel based coatings are also possible. Please use 10 μl coating solution and calculate with an area to be coated of 0.23 cm² per well. Refer to our Application Note 08 'Cell culture coating' on www.ibidi.com.

¹Collagen IV, BD Cat.-Nr. 35 6233, Fibronectin, BD Cat.-Nr. 354008, Poly-L-Lysin, Sigma Cat.-Nr. P4832, Poly-D-Lysin, BD Cat.-Nr. 354210

Seeding cells

- Trypsinize and count cells as usual. Dilute the cell suspension to the desired concentration. Depending on your cell type, we recommend $1-3 \times 10^5$ cells/ml.
- Apply 50 μl of the cell suspension into the upper well. Do not touch the gel matrix with the pipet tip.
- Incubate at 37 °C and 5 % CO₂ as usual.
- Conduct your experiment.

Depending on the cell type medium exchange is necessary every 1-2 days. Carefully aspirate the old medium and replace it by 50 μl fresh medium.

Optionally, μ-Slide Angiogenesis can be used for the following assays:

- Fill the inner well with a gel matrix and culture pieces of tissue or cell spheroids on it.
- Fill the inner well with cells suspended inside a gel matrix.
- Culture cells without a gel matrix directly in the minor wells. Use approx. 3×10^5 cells/ml and a volume of 10 μl. After cell attachment, add 50 μl cell-free medium to fill the upper well. Please keep in mind that the uncoated version does not provide direct cell growth. Use the tissue culture treated version (ibi-Treat) or your specific coating instead.

Tip:

Air bubbles in the gel can be reduced by equilibrating the slide inside the incubator overnight.

For less evaporation the space in-between the wells can be filled with sterile water.

In case bent gel surfaces are created, increase or decrease the amount of gel used, until you get flat and even gels.

Preparation for cell microscopy

When gel matrices are used the optical quality and the use of high magnification objective lenses might be restricted. Without any gel cells can be observed live or fixed directly in the μ-Slide on an inverted microscope. You can use any fixative of your choice. The μ-Slide material is compatible with a variety of chemicals, e.g. Acetone or Methanol. Further specifications can be found at www.ibidi.com. Due to the thin bottom of only 180 μm, high resolution microscopy is possible.

Immersion oil

When using oil immersion objectives, only the immersion oils specified in the table may be used. The use of different oil can lead to damages of the objective.

company	product	ordering number
Cargille	type DF, Formula Code: 1261	(Cargille) 16242
Zeiss	518 F	(Zeiss) 444960
Olympus	50CC	(Olympus) 35506
Nikon	50 CCM DF	(Nikon) MXA 20351
Leica	immersion oil, low fluorescence	(Leica) 11513859

μ -Slide Angiogenesis family

The μ -Slide Angiogenesis family is available with different surfaces. See table below for choosing your μ -Slide Angiogenesis.

Ordering number	Treatment or Coating	characteristics
81506	ibiTreat, tissue culture treated, sterile	hydrophilic, tissue culture treated
81501	uncoated, sterile	hydrophobic
81531	PEN-membrane, 1 μ m, sterile*	for Laser Microdissection

* The PEN foil does not fit to standard cover slip thickness.

Selected cell tests on different surfaces

Many eukaryotic and bacterial cells have been tested by ibidi on the different surfaces of the μ-Slides. A variety of other cell lines like COS, CHO, HepG3, and NIH 3T3 were successfully grown by our customers.

	ibiTreat	Collagen IV	Fibronectin	Poly-L-Lysin	Poly-D-Lysin	uncoated
HUVEC	excellent	good	excellent	no cell growth	not done	no cell growth
Rat1	excellent	excellent	excellent	excellent	excellent	poor
HT1080	excellent	excellent	excellent	excellent	not done	poor
HeLa	excellent	excellent	excellent	excellent	not done	poor
Neuro2A	excellent	excellent	excellent	excellent	excellent	poor
PC12	good	excellent	excellent	excellent	excellent	no cell growth
<i>Dictyostelium discoideum</i>	not done	excellent	not done	not done	not done	excellent
<i>Escherichia coli</i>	excellent	not done	not done	excellent	not done	excellent

HUVEC = Human Umbilical Vein Endothelial Cells

Rat1 = Rat Fibroblast

HT1080 = Human Fibrosarcoma

HeLa = Human Cervix Adenocarcinoma

Neuro2A = Mouse Neuroblastoma

PC12 = Rat Pheochromocytom

Dictyostelium discoideum = strain wild type AX-2

Escherichia coli = strain MDG131

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Further technical specifications can be found at www.ibidi.com. For questions and suggestions please contact us by mail info@ibidi.de or by telephone +49 (0)89/520 4617 0. All products are developed and produced in Germany. ©ibidi GmbH, Am Klopferspitz 19, 82152 Martinsried, Germany.