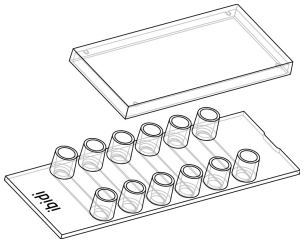


The ibidi product family is comprised of a variety of µ-Slides and µ-Dishes, which have all been designed for high-end microscopic analysis of fixed or living cells. The high optical quality of the material is similar to that of glass, so you can perform all kinds of fluorescence experiments with uncompromised resolution and choice of wavelength.

The convenient six channel format of the µ-Slide VI 0.4 is ideal for static cell cultivation and the application of standard immunofluorescence protocols, like treatment, staining, and microscopy of living or fixed cells. Alternatively, the µ-Slide VI 0.4 can be connected to a pump and enables you to observe cells under flow conditions.

The µ-Patterning technology enables spatially defined cell adhesion for various 2D and 3D cell culture applications. The cell-adhesive patterns are irreversibly printed on the non-adhesive Bioinert surface of the ibidi Polymer Coverslip, allowing for precisely controlled cell adhesion. The µ-Patterns are dry-stable, sterile, and ready to use. Bioinert itself is a thin hydrogel layer that is covalently attached to the ibidi Polymer Coverslip No. 1.5. In contrast to standard ultra-low attachment (ULA) coatings, Bioinert is completely non-adherent and allows no binding of any biomolecule, even in long-term experiments.

Material

ibidi µ-Slides, µ-Dishes, and µ-Plates are made of a polymer that has the highest optical quality. The polymer coverslip on the bottom exhibits extremely low birefringence and autofluorescence, similar to that of glass. Also, it is not possible to detach the bottom from the upper part. The µ-Slides, µ-Dishes, and µ-Plates are intended for one-time use and are not autoclavable, since they are only temperature-stable up to 80°C/175°F. Please note that gas exchange between the medium and the incubator's atmosphere occurs partially through the polymer coverslip, which should not be covered.

Optical Properties ibidi Polymer Coverslip	
Refractive index n_D (589 nm)	1.52
Abbe number	56
Thickness	No. 1.5 (180 µm)
Material	Polymer coverslip

Please note! The ibidi Polymer Coverslip is compatible with certain types of immersion oil only. A list of suitable oils can be found on page 6.

Shipping and Storage

The µ-Slides, µ-Dishes and µ-Plates are sterilized and welded in a gas-permeable packaging. The shelf life under proper storage conditions (in a dry place, no direct sunlight) is listed in the following table.

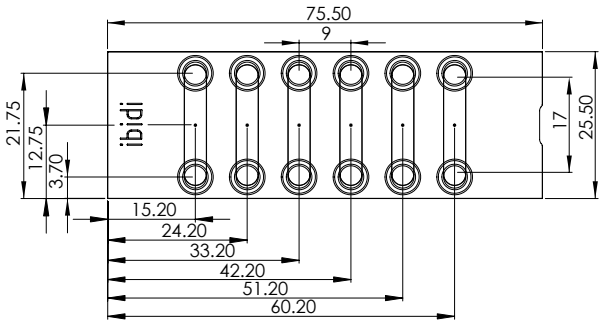
Conditions	
Shipping conditions	Ambient
Storage conditions	RT (15-25°C)

Shelf Life	
µ-Patterning	36 months

Store the µ-Patterning products in a dry place (relative humidity <50%).

Geometry of the µ-Slide VI 0.4

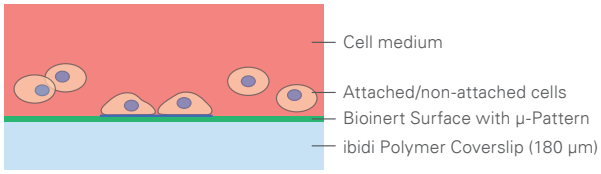
The µ-Slide VI 0.4 provides a standard slide format according to ISO 8037/1. The lateral adapter to adapter distance of 9 mm (like 96 well plates) allows using multichannel pipettes.



Geometry	
Outer dimensions in mm (w × l)	25.5 × 75.5
Adapters	Female Luer
Number of channels	6
Channel volume	30 µl
Channel height	0.4 mm
Channel length	17 mm
Channel width	3.8 mm
Volume per adapter	60 µl
Height with/without lid	8.7/7.5 mm
Growth area	0.6 cm^2 per channel
Coating area using 30 µl	1.2 cm^2 per channel
Bottom	ibidi Polymer Coverslip

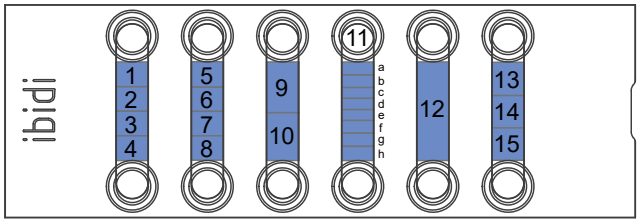
Geometry of the µ-Pattern

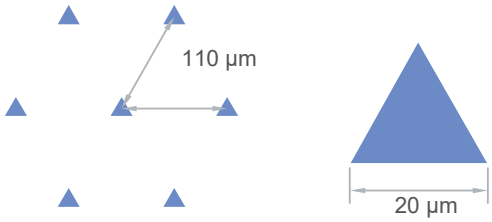
The cell-adhesive patterns are irreversibly printed on the non-adhesive Bioinert surface of the ibidi Polymer Coverslip, allowing for precisely controlled cell adhesion. The patterns are not visible under the microscope.



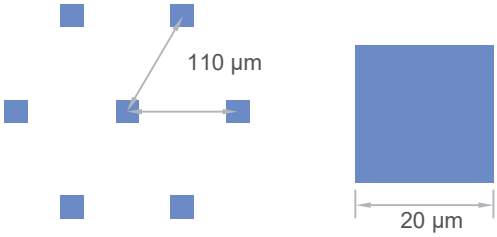
The µ-patterned surface presents the covalently bound tripeptide Arg-Gly-Asp (Arginine, Glycine, Aspartate - RGD). This amino acid sequence from the extracellular matrix protein fibronectin mediates cell attachment in many cell types.

The µ-Slide VI 0.4 µ-Pattern RGD Test Patterns 1 is a 15 pattern layout with the following geometry:

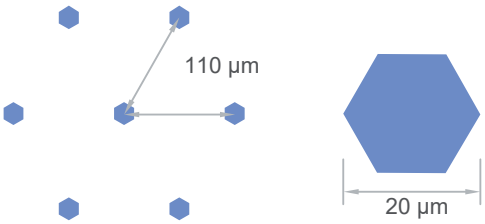




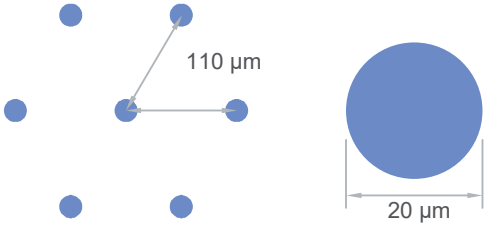
Pattern No. 1



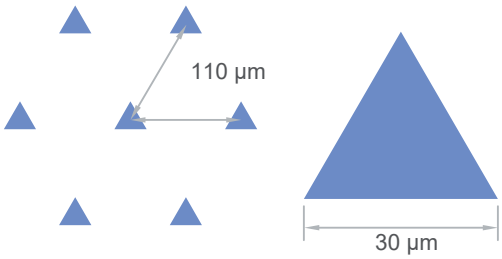
Pattern No. 2



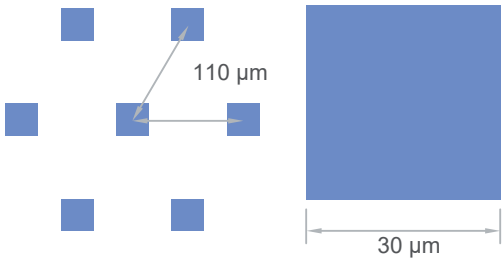
Pattern No. 3



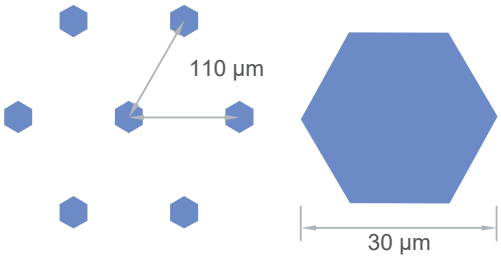
Pattern No. 4



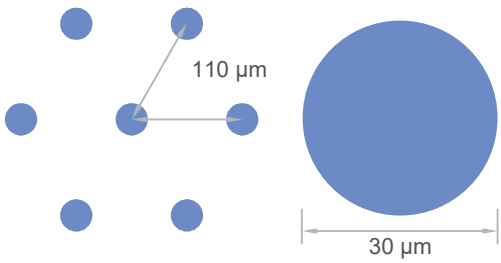
Pattern No. 5



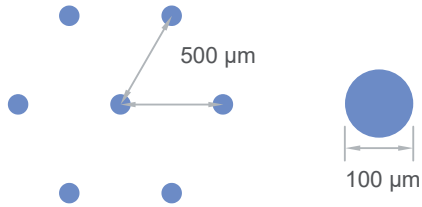
Pattern No. 6



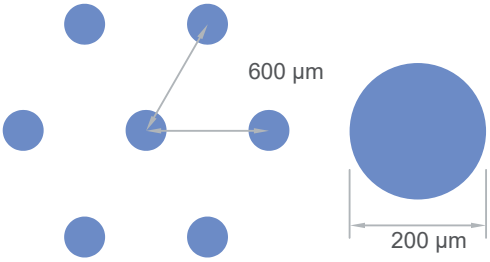
Pattern No. 7



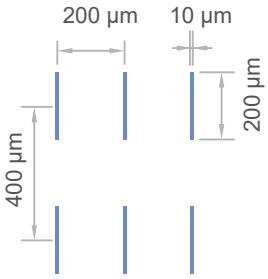
Pattern No. 8



Pattern No. 9



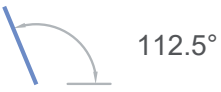
Pattern No. 10



Pattern No. 11

Pattern No. 11a

Pattern No. 11b



Pattern No. 11c

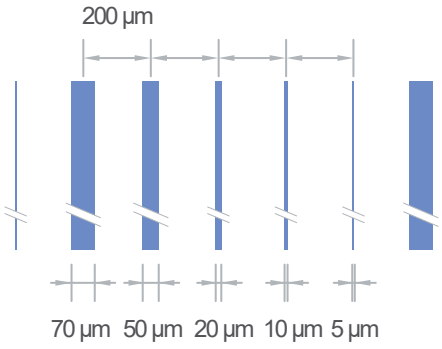
Pattern No. 11d

Pattern No. 11e

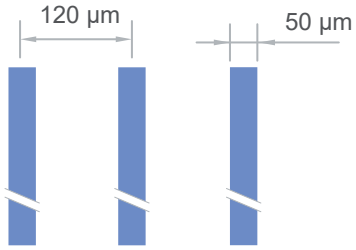
Pattern No. 11f

Pattern No. 11g

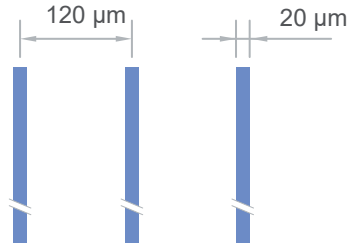
Pattern No. 11h



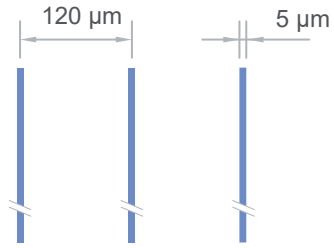
Pattern No. 12



Pattern No. 13



Pattern No. 14



Pattern No. 15

The Bioinert Surface

The Bioinert surface allows no adsorption, coating, or binding of proteins, antibodies, enzymes, and other biomolecules. Therefore, the Bioinert technology provides a stable passivation in cell-based assays for several days or even weeks. The hydrophilic Bioinert surface hinders any protein attachment, thus inhibiting subsequent cell attachment. The Bioinert surface is not biodegradable by cells allowing long-term assays with suspension cells and cell aggregates. Unlike with the ibiTreat and Uncoated surfaces, a coating is not possible.

Characteristics of the Bioinert Surface

Characteristics	
Bioinert surface thickness	200 nm
Bioinert surface material	Polyol-based hydrogel
Protein coatings	Not possible

Seeding Cells

Follow the steps below as a guideline for a general cell application protocol. Optimize the cell concentration for your needs in subsequent experiments.

- Trypsinize and count cells as usual. Dilute the cell suspension to the desired concentration. Depending on your cell type, we recommend a 1-7 × 10^5 cells/ml suspension.
- Apply 30 µl cell suspension into the channel of the µ-Slide. Quick dispensing helps to avoid trapped air bubbles.
- Cover with the supplied lid and incubate at 37°C and 5 % CO_2 as usual.
- Await cell attachment.
- Optionally, wash with cell-free medium.
- Leave each reservoir filled with 60 µl cell-free medium.

Tip:

The day before seeding the cells we recommend placing the cell medium and the µ-Slide into the incubator for equilibration. This will prevent the liquid inside the channel from emerging air bubbles over the incubation time.
Trapped air bubbles can be removed from the channel by inclining the µ-Slide and knocking at one edge.

Tip:

Make sure to avoid uneven incubator shelves and microscope stages. Single cells or cell clusters might roll on one side over time. Please also avoid evaporation and temperature changes. Both will lead to convectional flow.

Exchanging Medium

Aspirate both reservoirs and slowly fill 120 µl of fresh medium into one of the reservoirs, which will replace the channel volume by gravity flow.

Attention:

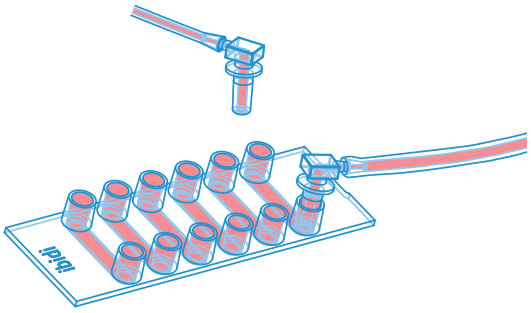
Carefully remove and re-fill liquid with a standard pipette. Be careful when using a cell culture aspiration device as this may flush away partially attached cells or clusters.

Connecting Tubing for Perfusion

The µ-Slide is fully compatible with the ibidi Pump System and other pump setups.

Detailed information about flow rates, shear stress, and shear rates is provided in Application Note 11 "Shear stress and shear rates". Suitable Tube Adapter Sets are also available (see page 7). They consist of a tubing (20 cm) with inner diameter of 1.6 mm and adapters for the connection between the ibidi µ-Slide (female Luer) and the tubing of the pump in use.

1. Fill the Luer ports with cell-free medium until they are completely filled. This ensures air bubble-free connection of the tubing.
2. Prepare the perfusion system by 1) filling the tubing completely and 2) pinching off the tubing with a screw clamp or a hose clip.
3. Connect the male Luer ends of the clamped tubing to the Luer ports one at a time. Make sure not to trap air. Remove access culture medium with tissue.



4. Open the clamped tubing and conduct your perfusion experiment.

Shear Stress in the µ-Slide VI 0.4

The shear stress (τ) in the µ-Slide VI $^{0.4}$ can be calculated by inserting the flowrate (Φ) and the dynamical viscosity (η) in the following formula:

$$\tau = \eta \cdot 176.1 \cdot \Phi$$

$$Shearstress \quad \tau \left[\frac{dyn}{cm^2}\right]$$

$$Dynamicalviscosity \quad \eta \left[\frac{dyn \cdot s}{cm^2}\right]$$

$$Flowrate \quad \Phi \left[\frac{ml}{min}\right]$$

Please insert the values in the given unit definitions. For simplicity the calculations include conversions of units (not shown).

Microscopy

To analyze your cells, no special preparations are necessary. Cells can be directly observed live or fixed, preferably on an inverted microscope. The bottom cannot be removed. For optimal results in fluorescence microscopy and storage of fixed and stained samples, ibidi provides a mounting medium (50001) optimized for µ-Dishes, µ-Slides, and µ-Plates.

Chemical Compatibility

The following table provides some basic information on the chemical and solvent compatibility:

Chemical / Solvent	Compatibility
Methanol	yes
Ethanol	yes
Formaldehyde	yes
Acetone	yes, without lid
Mineral oil	no
Silicone oil	yes
Immersion oil	See **Immersion Oil** on page 6.

Immersion Oil

When using oil immersion objectives with the ibidi Polymer Coverslip, use only the immersion oils specified in the table below. The use of any non-recommended oil could damage the ibidi Polymer Coverslip. The resulting leakage may harm objectives and microscope components. All immersion oils that are not listed in the table below should be considered as non-compatible.

Company	Product	Ordering No.	Lot Number	Test Date
ibidi	ibidi Immersion Oil	50101	16-12-27	01/2017
Cargille	Type A	16482	100592	01/2017
Cargille	Type HF	16245	92192	01/2017
Carl Roth	Immersion oil	X899.1	414220338	01/2017
Leica	Immersion Liquid	11513859	n.a.	03/2011
Nikon	Immersion Oil F2 30cc	MXA22192	n.a.	01/2020
Nikon	Silicone Immersion Oil 30cc	MXA22179	20191101	01/2020
Olympus	Silicone Immersion Oil	SIL300CS-30CC	N4190800	01/2017
Zeiss	Immersol 518 F	444960	160706	01/2017
Zeiss	Immersol W 2010	444969	101122	04/2012

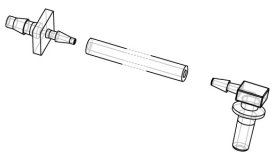
Ordering Information

The µ-Patterning family is available in different slide formats.

Cat. No.	Description	Pcs./Box
83601	**µ-Slide VI 0.4 µ-Pattern RGD, sqr20, pit110, hex**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 20 µm squares, 110 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	10
83601-S	**µ-Slide VI 0.4 µ-Pattern RGD, sqr20, pit110, hex Trial Pack**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 20 µm squares, 110 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	2
83602	**µ-Slide VI 0.4 µ-Pattern RGD, cir100, pit500, hex**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 100 µm circles, 500 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	10
83602-S	**µ-Slide VI 0.4 µ-Pattern RGD, cir100, pit500, hex Trial Pack**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 100 µm circles, 500 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	2
83651	**µ-Slide VI 0.4 µ-Pattern RGD Test Patterns 1**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 15 patterns, surface passivation with Bioinert, sterilized	2

Cat. No.	Description	Pcs./Box
83801	**µ-Slide 8 Well high µ-Pattern RGD, sqr20, pit110, hex**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 20 µm squares, 110 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	10
83801-S	**µ-Slide 8 Well high µ-Pattern RGD, sqr20, pit110, hex Trial Pack**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 20 µm squares, 110 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	2
83802	**µ-Slide 8 Well high µ-Pattern RGD, cir100, pit500, hex**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 100 µm circles, 500 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	10
83802-S	**µ-Slide 8 Well high µ-Pattern RGD, cir100, pit500, hex Trial Pack**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 100 µm circles, 500 µm pitch, hexagonal layout, surface passivation with Bioinert, sterilized	2
83851	**µ-Slide 8 Well high µ-Pattern RGD Test Patterns 1**: #1.5 polymer coverslip, micropatterned surface with RGD motif, 15 patterns, surface passivation with Bioinert, sterilized	2

Tube Adapter Set



Cat. No.	Description	Pcs./Box
10831	**Tube Adapter Set**: sterilized	6x2

For research use only!

Further information can be found at ibidi.com. For questions and suggestions please contact us by e-mail *info@ibidi.de* or by telephone +49 (0)89/520 4617 0.