

Quick Guide



Handling and assembling of microfluidic microtiter plate and microfluidic foil



BioLector® Pro

BioLector® Pro is the newest member of our product family. It combines the proven and scalable BioLector® technology with an innovative microfluidic chip. The specifically developed disposable 48 well microtiter plate (MTP) of the BioLector® Pro features not only online measurements of biomass, fluorescence, pH and dissolved oxygen (DO) but controls pH and feeding rates at the same time as well.

Both, control and feeding are realized through micro valves and channels engraved in the bottom of the MTP (see Figure 1).

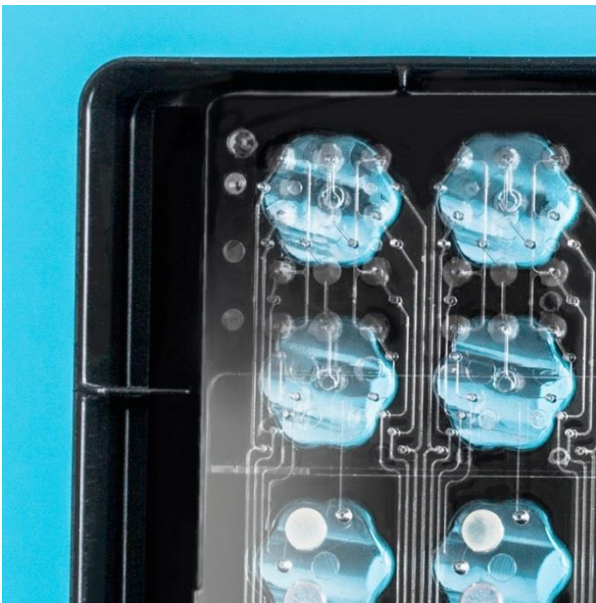


Figure 1: Microfluidic chip

BioLector® Pro is a high performance device being able to achieve feeding rates in nanoliter scale either continuously or triggered by online-monitored signals. To ensure this high standard of precision it is crucial to avoid damage on the microchip impeding with the microfluidics or the online measurements.

Thus, small particles can block micro valves leading to impaired microfluidic flows or entirely blocked valves and channels.

Scratches on the microfluidic chip can lead to leakiness and might influence the optical measure-

ment of fluorescence, biomass and DO and pH values. Wrong signals will ultimately lead to wrongly triggered microfluidic flows in turn.

Handling of the BioLector® Pro μ -fluidic MTP

Since the microfluidic chip is thicker than the standard MTP bottom of a FlowerPlate® and Round Well Plate, it is flush with the MTP body and will touch any surface the MTP is placed on (see Figure 2).

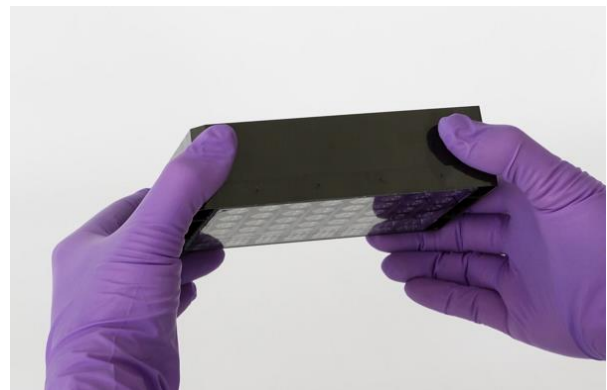


Figure 2: Bottom of a MTP-MF32-BOH FlowerPlate®

To reduce the risk of damaging the microfluidic chip m2p-labs supplies a plate protection frame that protects the chip from touching any surfaces (see Figure 3).



Figure 3: Plate protection frame with and without MTP-MF32-BOH FlowerPlate®

Instead of placing your microtiter plates on e.g. work tables or clean benches, first put it into the plate protection frame and only then move it from place to place. Remove the MTP from the plate protection frame before placing it into the

BioLector® device. Make sure not to touch the MTP bottom with fingers or gloves to prevent any hindrances for the optical measurements.

Two plate protection frames are delivered with every BioLector® Pro. The handling of MTP and plate protection frame will be explained during the installation of the BioLector® device by one of m2p-labs' application specialists as well. Additional plate protection frames can be ordered via web (order@m2p-labs.com) or fax (see below).

Lastly it is very important to use each BioLector® Pro μ -fluidic MTP only once. Using a Microfluidic plate more than once will result in wrong and inhomogeneous pumping results.

Handling of the BioLector® Pro MTP foil F-GPRSMF32-1

Another important factor to achieve the high standard of precision described before is the tightness of the MTP. Actuation of the micro valves is realized with air pressure. Therefore, it is inevitable to ensure that the MTP is absolutely air tight and none of the applied pressure is lost.

m2p-labs developed an MTP cover foil based on our other plate cover products not only ensuring leak tightness but reducing evaporation and allowing automated sampling with our RoboLector® platforms, too (see Figure 4).

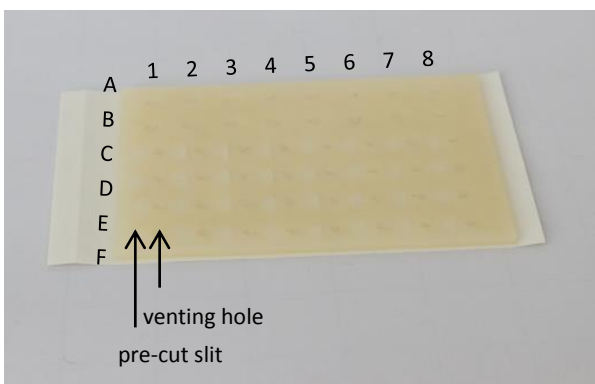


Figure 4: F-GPRSMF32-1

The new F-GPRSMF32-1 cover foil consists of a perforated silicone layer laminated to a non-woven gas permeable sealing foil. The reservoir wells

A01 – B08 each contain one centric hole to apply the necessary pressure for the microfluidic system. The cultivation wells C01 – F08 contain venting holes on the right side of the wells allowing uniform and sufficient aeration. Additionally the cultivation wells contain pre-cut slits on the left side for automated sterile sampling and dosing steps in our RoboLector® systems. After being pierced by a liquid handler the pre-cut slits close again.

To correctly apply the cover foil to the BioLector® Pro MTP first grab the right handed side's end of the foil and remove the supporting film from the gas permeable sealing foil carefully without touching the sterile foil itself (see Figure 5).

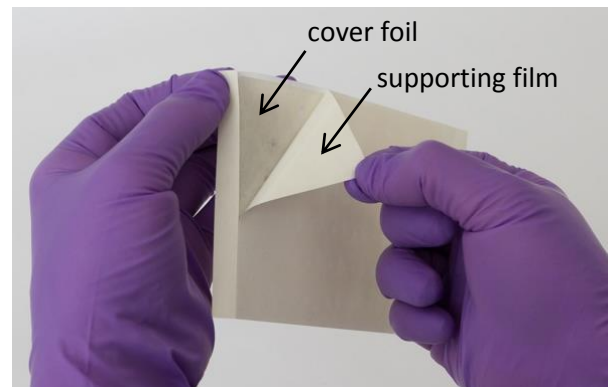


Figure 5: Removing the supporting film

Next attach the foil with the silicon layer flush to the upper and the right edge of the MTP (see Figure 6).

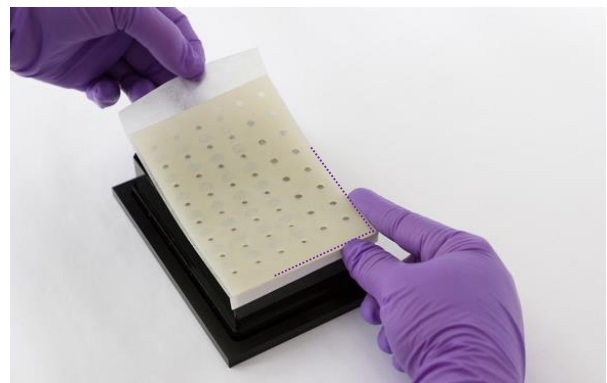


Figure 6: Attaching F-GPRSMF32-1 to the MTP

Then carefully smooth the F-GPRSMF32-1 over the whole MTP while making sure that every single

well can be seen through the cover foil (see Figure 7).

It is very important to make sure that the pressure holes are applied centrally above the reservoir wells, otherwise the pressure might not be applied equally to all wells resulting in wrong pump volumes.

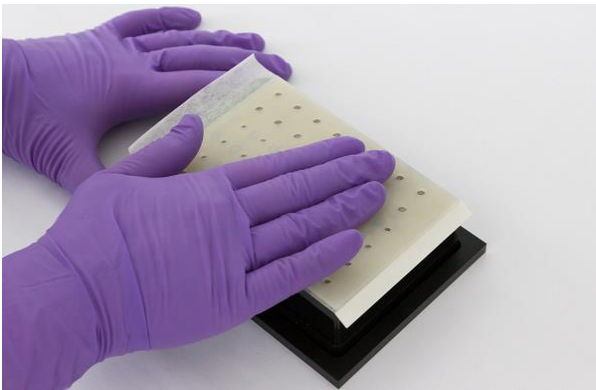


Figure 7: Smoothing F-GPRSMF32-1 to the MTP

Finally, remove the remaining supporting foil at the left end of the cover foil and fix the overlapping ends to the MTP (see Figure 8).

Please mind that the pre-cut slits have to be on the left side of the aeration holes in each well (see Figure 4).

Furthermore it is of highest importance that every foil can only be used once. In case an experiment is paused and the F-GPRSMF32-1 is removed, for example to take a sample, seal the MTP with a new cover foil. Otherwise leakage might occur resulting in wrong pump volumes.

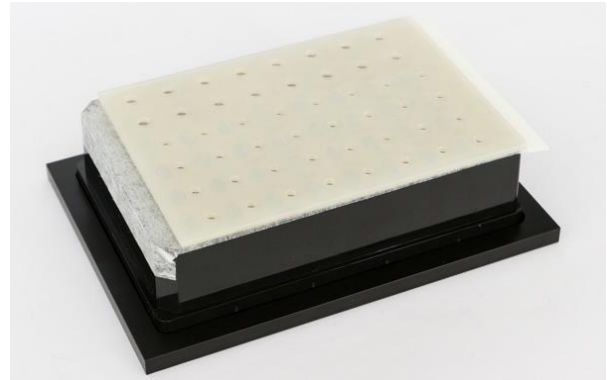


Figure 8: Correctly applied F-GPRSMF32-1

Additional information

All products mentioned before can be ordered via web (order@m2p-labs.com) or fax (see below). For detailed information about the BioLector® Pro please refer to the BioLector® II Instruction Manual.

Please visit our website for further information: www.m2p-labs.com.



Please make sure to use sufficient safety measures such as appropriate gloves and eye protection when working with acids and bases.

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