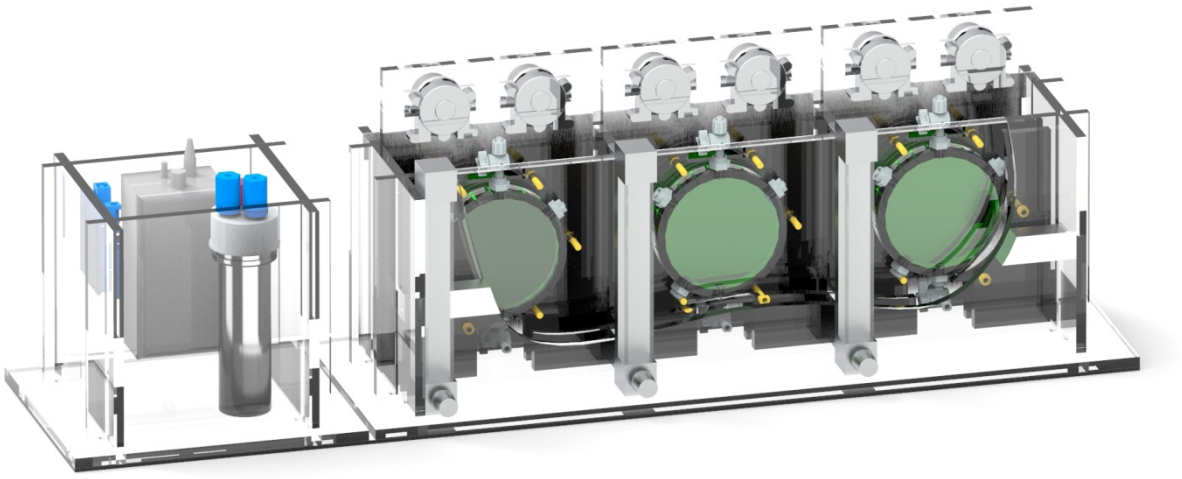
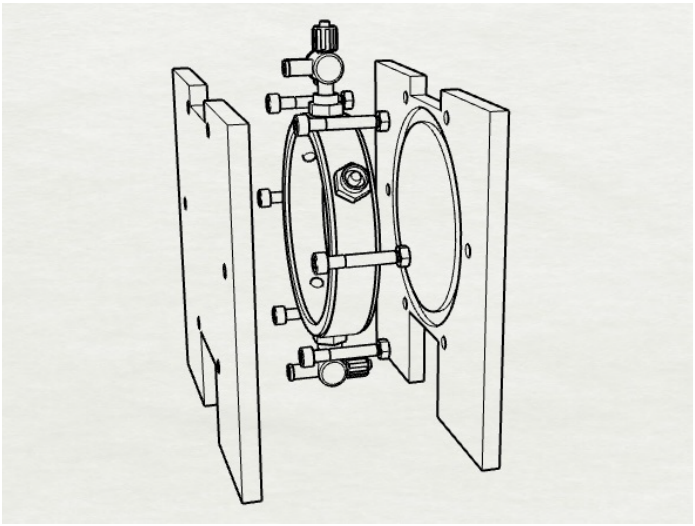


Flat Panel (Open PBR) Fully Autoclaveable!

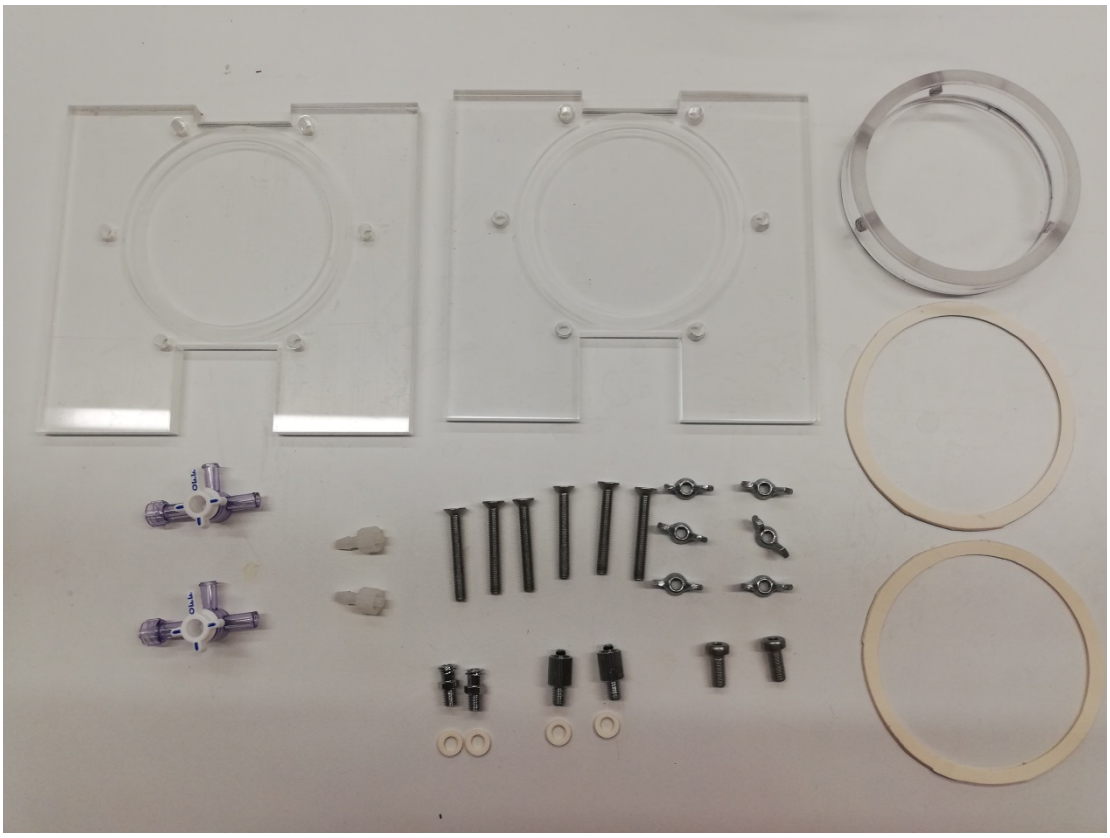
This do it yourself tutorial is for the Open PBR Flat Panel setup.

This cultivation vessel can be used as single or in a triplicate cultivation setup. It has a volume of 95 ml up to 195 ml. In the smallest variant it is just 15 mm thick which enables high density cultivation. All parts on this vessel is autoclaveable at 121°C for 40 min at 4 bar.

This protocol is fairly difficult but you can massage us at igemberl@hu-berlin.de for guidance. We bought about 2 m of Plexiglas pipe 90x102, which is the most expensive part on this setup, and could send you the ring thickness of your choice by post.



Parts:



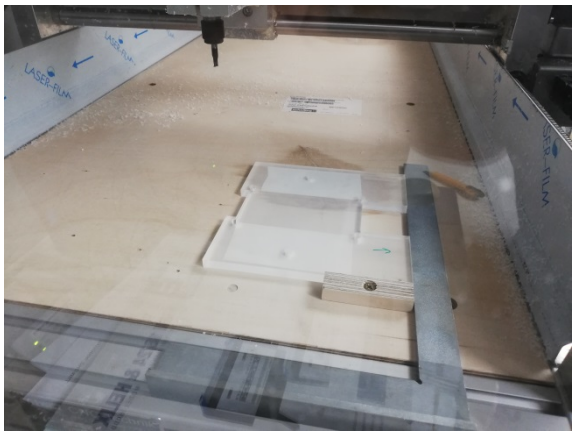
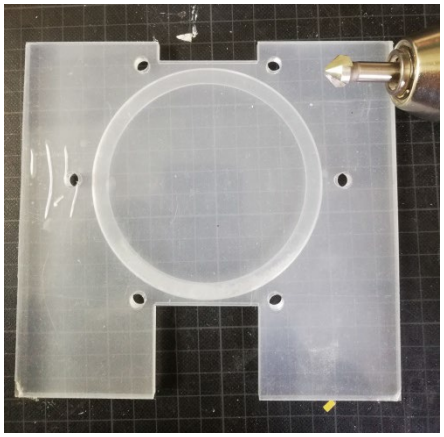
- Two Plexiglas (PMMA) plates 8mm thick, 155x165mm ~ 5 Euro
- Plexiglas ring 17x90x102mm ~ 2 euro
  http://www.gruenberg-kunststoffe.de/produkte/acrylglas-pmma/
- 6x M4 flat head screws 40 mm long
- 6x M4 butterfly nut
- 2x M6 screws (optional for none turbidostatic mode) ~5 Euro
- 2x Luerlock M6 female adapter
  https://www.droh.de/produkt/6184-adapter-aus-messing-vernickelt-anschluesse-luer-lock-weiblich-m5-gewinde 3,10 Euro
- 2x Luerlock M6 male adapter
  https://www.droh.de/produkt/6198-adapter-aus-messing-vernickelt-anschluesse-luer-lock-maennlich-m6-gewinde 4,80 Euro
- 2x Luerlock threeway stopcock
  https://www.coleparmer.de/i/cole-parmer-stopcocks-with-luer-connections-3-way-male-lock-non-sterile-10-pk/3060002 x10 19,65 Euro
- 2x Luerlock female
- https://www.coleparmer.de/i/cole-parmer-male-luer-with-lock-ring-x-1-4-id-hose-barb-nylon-25-pk/ x25 for 7,50 Euro
- 2x silicone rings 2x90x102mm (self-made from 2mm silicone mat)
  https://www.amazon.de/Halnziye-Termico-Grau-Silicon-Thermal/dp/B07HP87HJH 15 Euro for 50x50mm

Total: 62,40 Euro
For three Flat Panel: 87,80 Euro

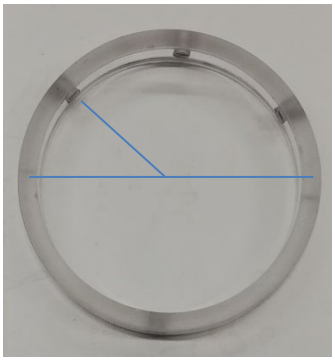
How to build it, step by step;

Laser cut and CNC files are in the Github Open PBR folder.

Step 1: Plexiglas: After laser cutting the edges and holes in to the two flat panel pieces you have use a CNC milling machine with a 8mm drill to mill 3 mm deep rings out of the glass. Then use a drill to make the holes suitable for M6 screws and widen the holes for flat head screws. These will ensure a tight seal of the flat panel.

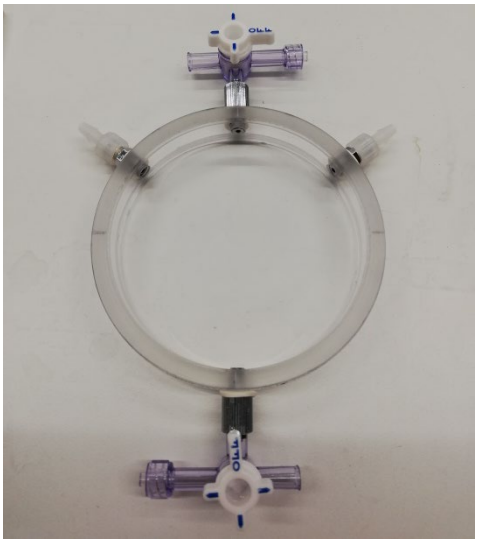
Step 2: Rings:
The volume of this flat panel setup is determined by the thickness of the ring between the Plexiglas walls. For the 95ml volume setup the ring is 17 mm thick. On each side 1 mm will sit in the previously milled groove. For bigger volumes cut rings as you like.
Drill six M6 holes, for the Luerlock valves, into the ring. Two holes opposite of each other and two in a 35° angel from the equator.
Detailed construction drawing is in the Github folder.

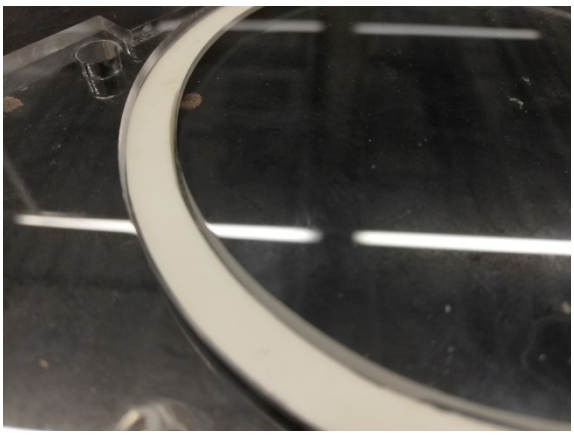



3. Step: Silicone sealing: Cut out of the silicone mat rings with 90x100 mm diameter.

4. Step: Assembly:

1. Put the two male M6 Luerlock adapter, with small silicone sealing rings, opposite of each other in the holes.
2. The two female M6 Luerlock adapters come in to the remaining holes.
3. Attach the three way stopcocks in the male Luerlock adapter. Lay the silicone rings in to the two grooves.

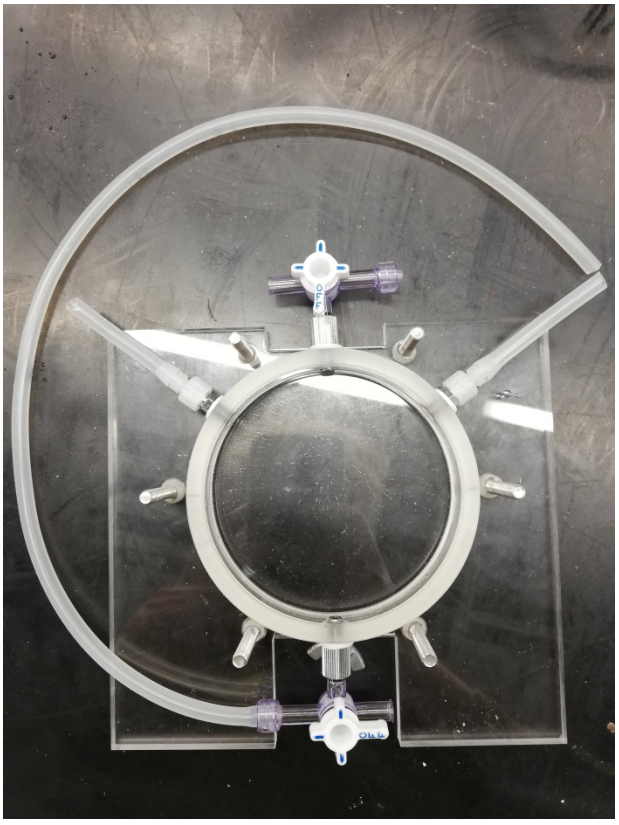


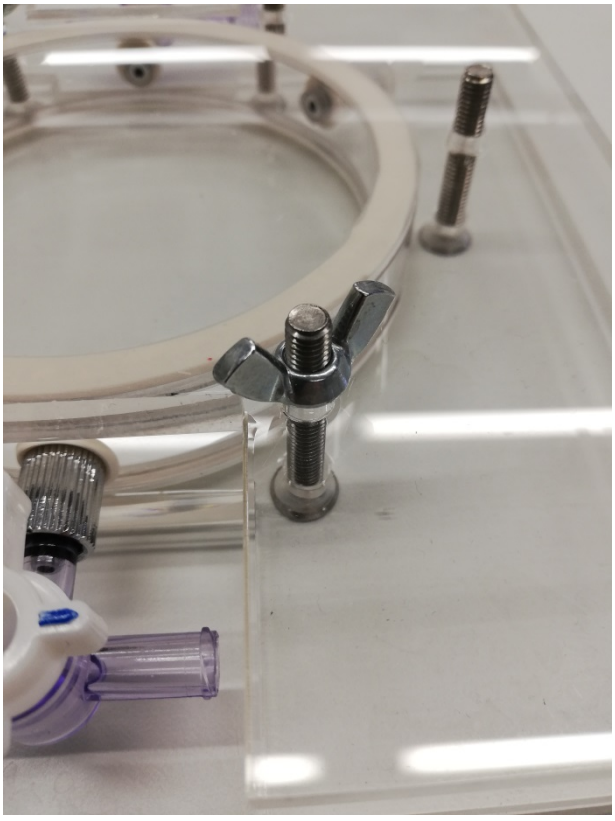


5. Put the M4 screws into the holes and lay the wall with the drilled cones on the down side.

6. Lay the ring into the groove with the silicone ring and attach silicon tubing’s to the Luerlock’s.

7. Put the other wall on top and screw the butterfly nut’s tightly.





Done and ready to use