Corchea: paper-based microfluidic device

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Low-cost, high-quality ...

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ABSTRACT

Corchea is a paper-based microfluidic system for culture and communicate bacteria on flow. Its has a hardware that you can make with a 3D printer and laser cut. The system allows the directed communications between biofilms and we aim to array biological logic gates on it to make complex information processing.

MATERIALS

- #1 Whatman paper Coorstek Catalog #1001-150
- Acrylic Sheet McMaster-Carr
- Scissors Carl Roth Catalog #HCT7.1
- Z-ABS Contributed by users
- Crayon Contributed by users

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PROTOCOL STATUS: In development
We are still developing and optimizing this protocol.
Paper design

1. Draw the borders of your device and the future channels in your paper (#1 Whatman)

2. Cut the borders
3 Fill with wax crayons all the parts that you don’t want the fluid pass
Melt the wax, we use a regular oven at 100 °C for 140s. Remove it from the heat and let the wax solidify. It must cross the paper.
5 Put the paper in between the acrylic sheets. You can put some tape to make it more impermable.
6 Put the acrylic paper sandwich in the lid of the hardware.
Introduce the paper ends in the Source and close the device. You can use a tip box as pint of support.
8 Insert the paper acrylic sandwich in the clip to keep pressure in it and put the filter. Now you are ready to do experiments.
Experiment workflow

9  Put your favorite bacteria direct in the channels or you can use paper discs previously cultured with bacteria.
Set your experiment. In this case we introduce the device in an incubator and get results with FluoPi a Low-Cost and Open-Acces transiluminator. Fabricate your own FluoPi

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