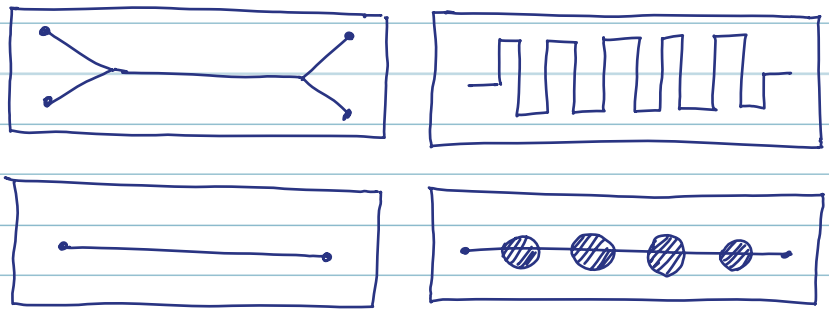
Part I: Due Friday

(A) Fabricate by Hand (Using
1. Microscope Slides
2. Double Sided tape
3. E-XACTO KNIVES)

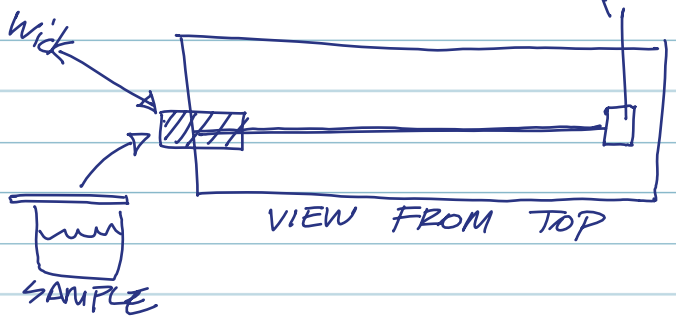
↓

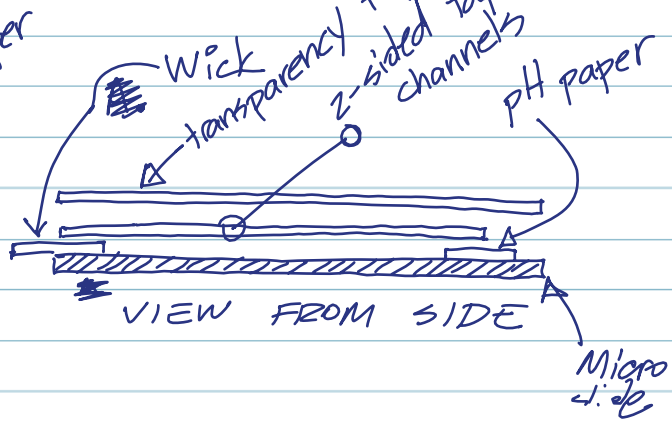
the following chips



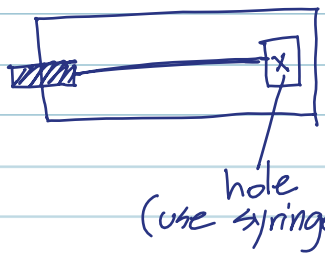
(B) Make a hybrid chip ~~from~~ using one of the ~~these~~ designs.

A Hybrid Chip





Remember to make the hole so you won't try to wick liquid in a vacuum



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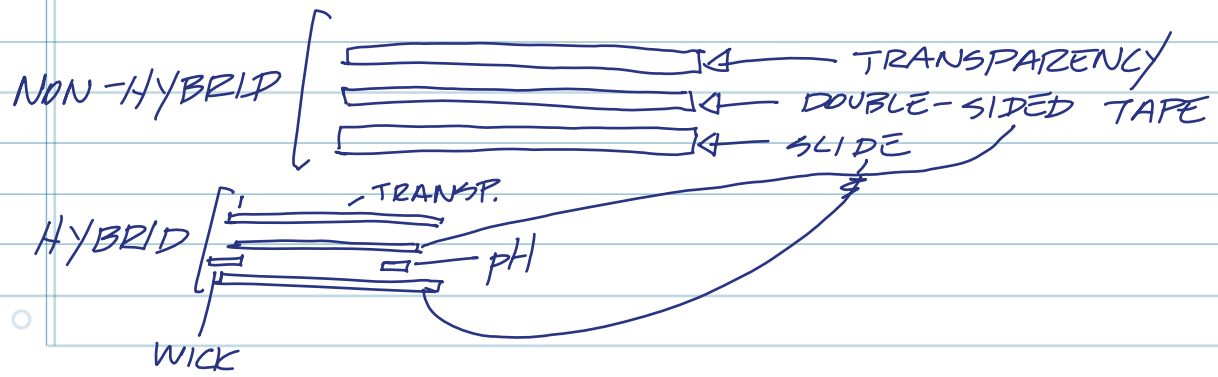
(A) and (B) Questions for Discussion and follow-on exercises.

- Inject two different food coloring samples inside your (A) chip. How did they behave? Did they mix? Did they flow on their own or did you have to inject them?
- Repeat above for B. Discuss (10 lines)

(C) Use the $ vinyl cutter to re-create (A) and (B) (one of each)

Steps

1. Draw the pattern on the computer
2. Load the double sided paper onto the carrier sheet
3. Print using settings emailed to you by 1pm on Thursday by Katie Creasey, IIH UROP
4. You will have a more accurate double-sided pattern. Use it to create chips w/ standard sandwich method.



TOTAL DELIVERABLES

Devices
- (A) 4 chips
- (C) 2 chips
- (B) 1 chip

Discuss
- (A) and (B) Discussion questions

Pictures of your chips w/ fluid

Background Reading

Lab-on-a-chip devices for global health: Past studies and future opportunities
Curtis D. Chin, Vincent Linder, Samuel K. Sia, Lab Chip, 2007, (1),41-57
DOI: 10.1039/b611455e

Low-cost rapid prototyping of flexible microfluidic devices using a desktop digital craft cutter
Po Ki Yuen, Vasiliy N. Goral, Lab Chip, 2010, (3),384-387
DOI: 10.1039/b918089c

Rapid prototyping of microfluidic devices with a wax printer
Govind V. Kaigala, Sunny Ho, Roel Penterman, Christopher J. Backhouse, Lab Chip, 2007, (3),384-387
DOI: 10.1039/b617764f

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