

**biohack
academy**



Music DNA encoding

1. 音楽をDNA塩基配列に変換 Encoding Music to DNA Sequence



Note No.	1	2	3	4	5	6						
	Pitch (Frequency)	Duration										
Pitch/Duration	D5	1/4	F5	1/32	D5	1/4-1/8	C5	1/8+1/16	C5	1/16	C5	1/16
Amino Acid -	L - 1	H - 1	N - 1	N - 2	L - 2	M - 1	- 1	K - 1	I - 2	Q - 1	I - 3	Q - 2
DNA codon	TTA	CAT	AAT	AAC	TTG	ATG	ATT	AAA	ATC	CAA	ATA	CAG



TTACATAATAACTTGATGATTAAAATCCAAATACAG…



Experimenting with biomaterials

dyeing Kombucha

using turmeric and cabbage, beetroot extract
after the 1L grew for 12-14 days



- green Tea
brew

- bright orange/red
- seems more streaky
on the surface



- Lososinated for 1hr
- upload website
picus underneath
to see sharp effect by



after 3 days ↓



open tea balls mix :
Canned with coffee brew
coffee powder over w/
+20k.
sharp color change



black Tea brew



green Tea brew



black Tea



green Tea



green Tea brew



Growing your own Paper





Build your own race tracks



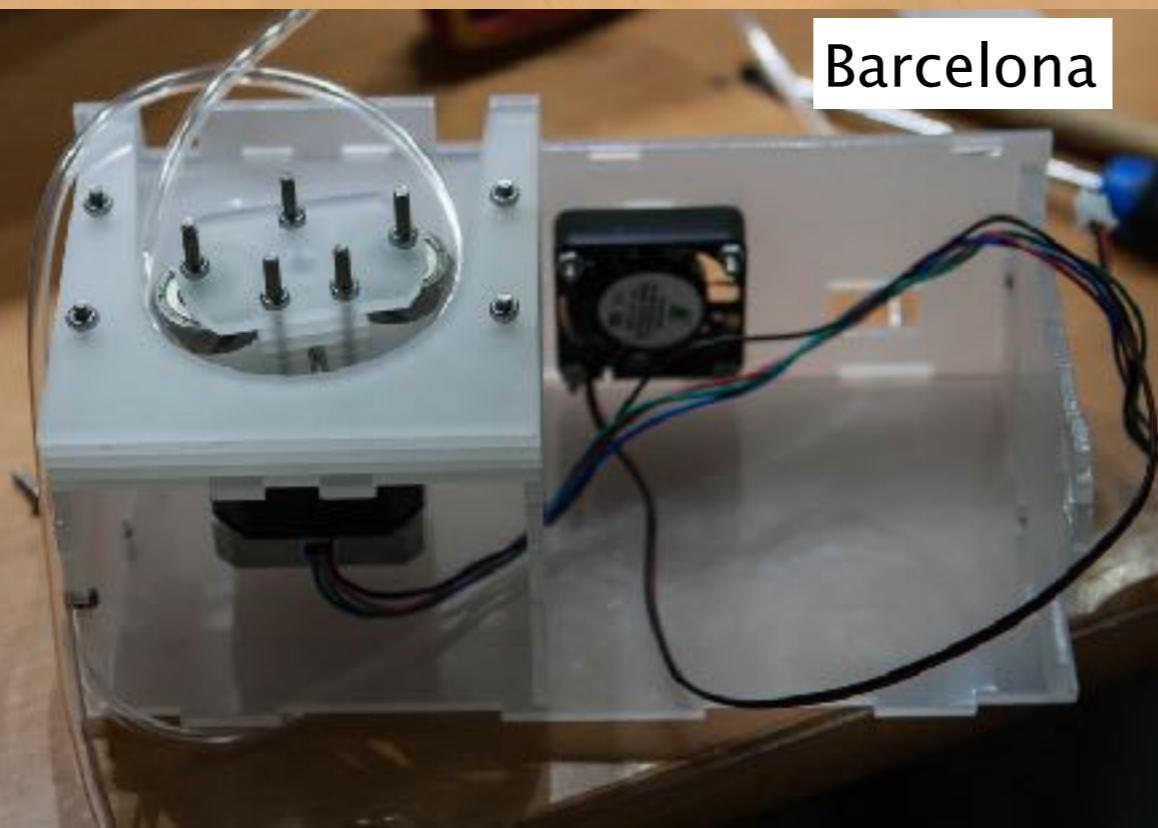
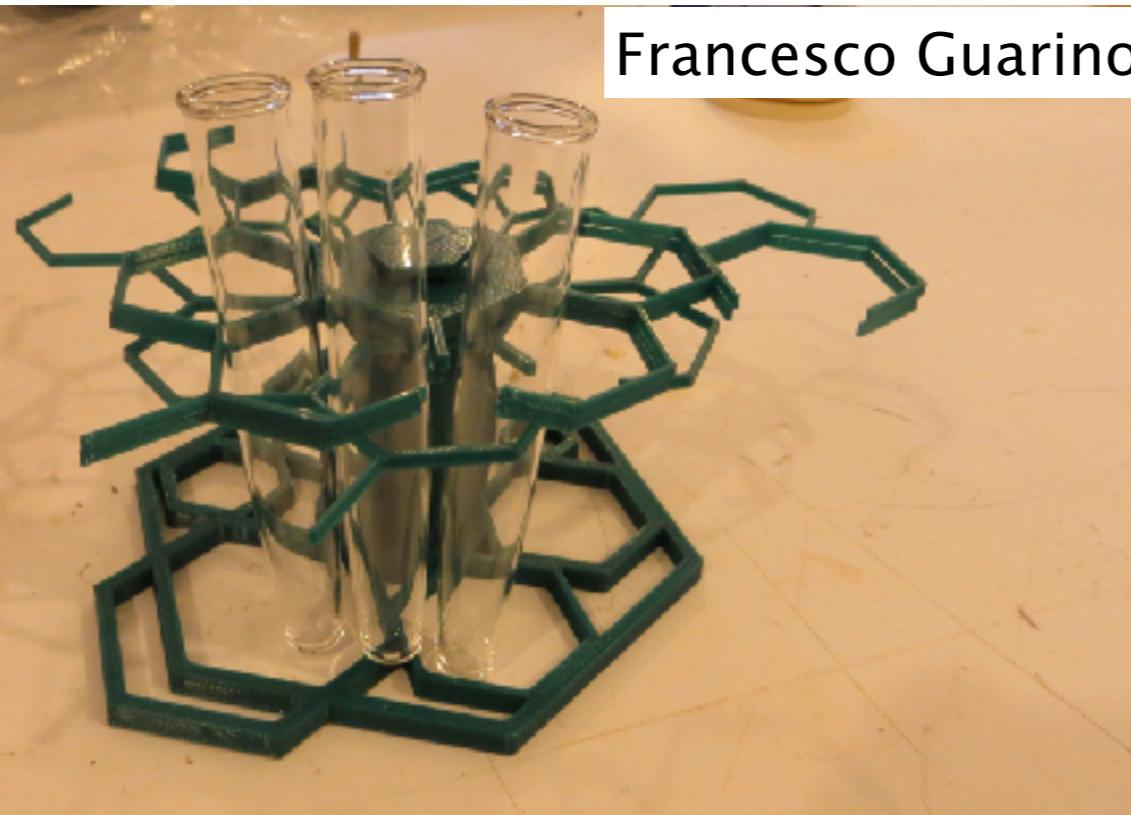


DIY Biohack Academy kit





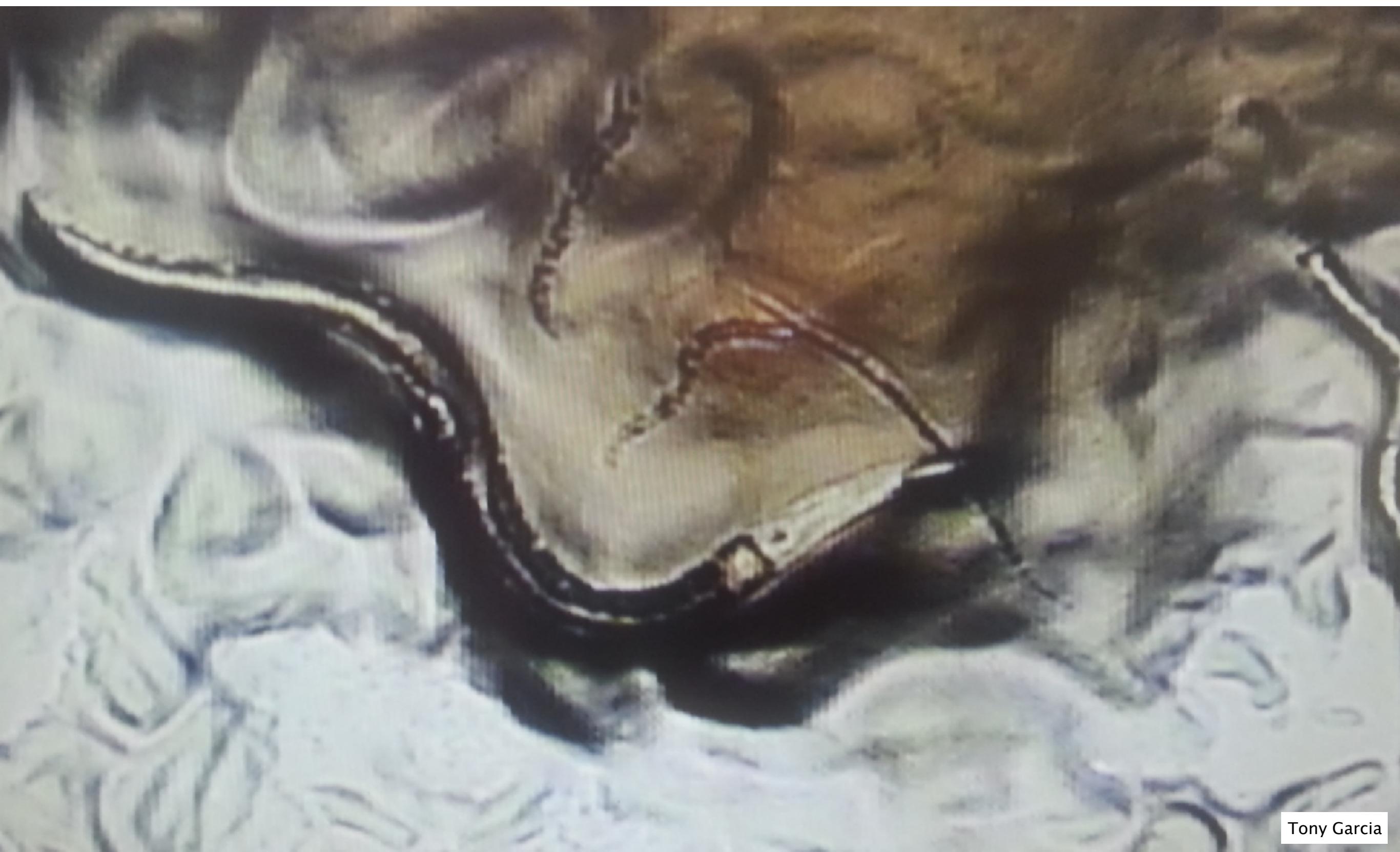
Invent new lab tools



in·cu·ba·tio

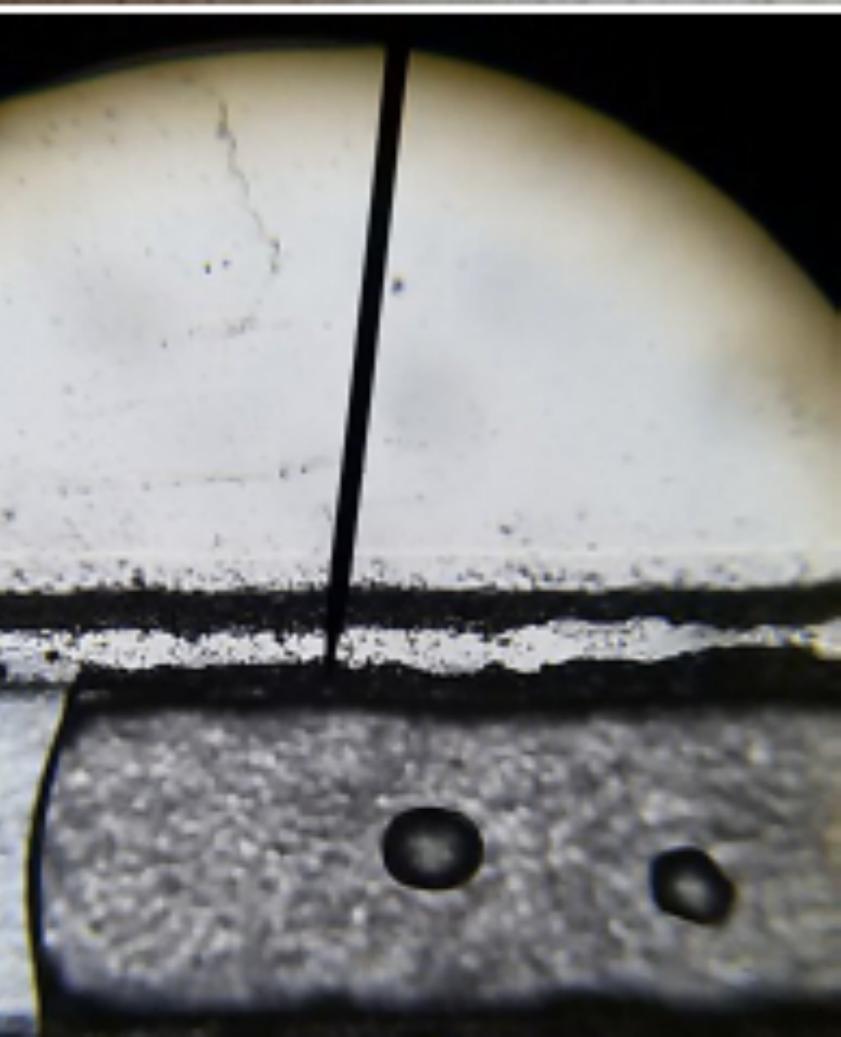
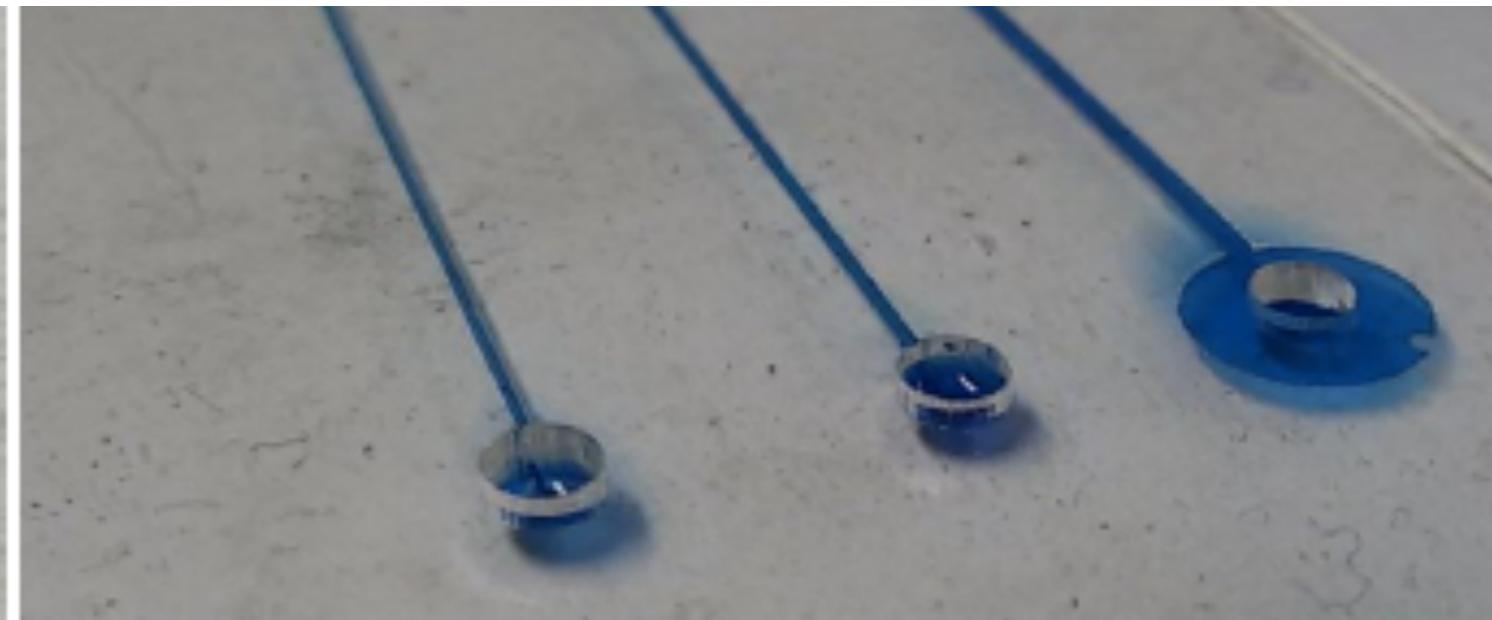


Search for longevity





Experiment with microfluidic chips



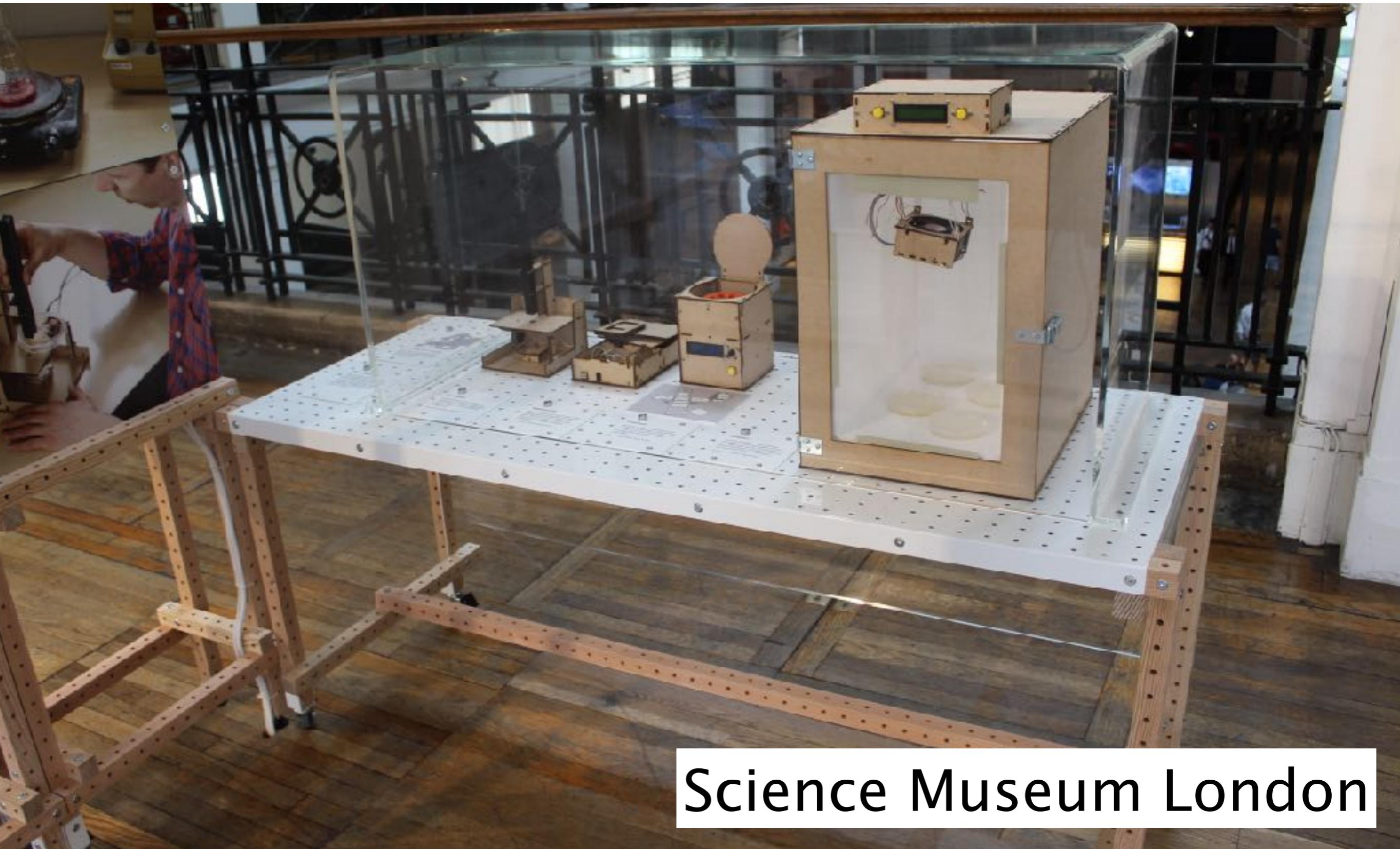


Video track plant growth





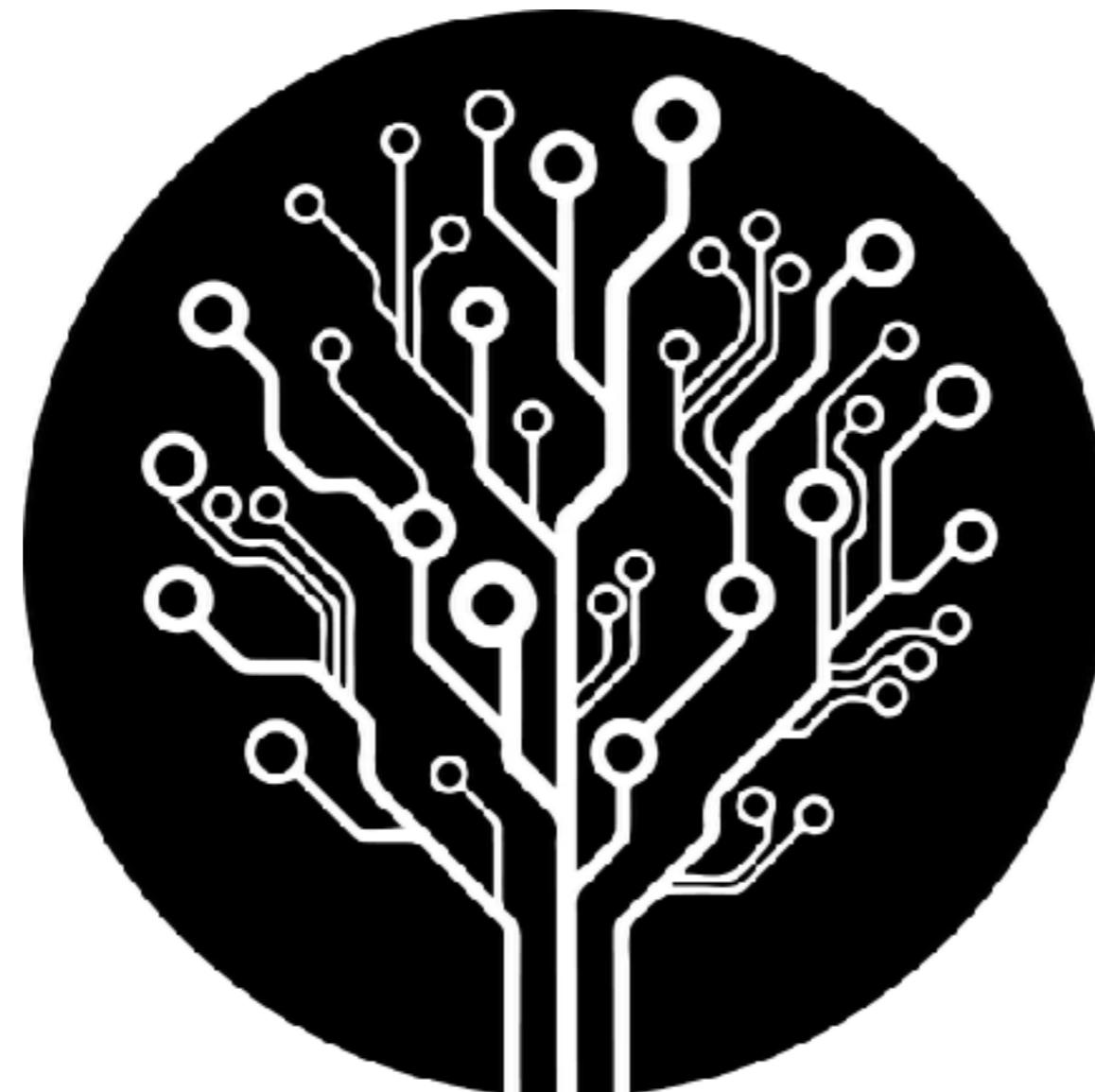
End up in galleries & museums



Science Museum London



Welcome - 欢迎 - ようこそ - 환영

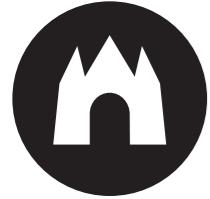


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BioHack Academy Partner labs





Today's schedule

- Introduction
- History of Biohacking
- Biosafety
- 3D design tools
- Sterile hood design



The Challenge

Build your lab

Use it

Share it



Build a lab



biohack academy
waag society

Open Source BioHack Kit





Everything Open Source

This repository Search Pull requests Issues Gist

BioHackAcademy / BHA_Stirrer Unwatch 4 Star 2 Fork 7

Code Issues 0 Pull requests 0 Projects 0 Wiki Pulse Graphs Settings

BioHack Academy Magnetic Stirrer Edit

14 commits 2 branches 1 release 1 contributor GPL-2.0

Branch: master New pull request Create new file Upload files Find file Clone or download

PieterVanBoheemen BHA4 update	Latest commit ed9670a on Dec 16, 2016
Pictures	pictures + assembly guide
BoM.md	BHA4 update
LICENSE	init
Magnetic Stirrer-Cut-Sheet.svg	BHA4 update
Magnetic-Stirrer-Fritzing.fzz	BHA4 update
Magnetic-Stirrer-Sketchup.skp	BHA4 update
README.md	BHA4 update
Stirrer-Assembly.pdf	pictures + assembly guide

README.md

BHA Stirrer



The difference



Cheap
Basic
Standard parts
Open Source
Easily modified
Prototype



Robust
Tested
Safe
Idiot proof
Warranty
Daily use



Use your lab



Waag Society - CC-BY-SA 4.0



Waag Society - CC-BY-SA 4.0



Waag Society - CC-BY-SA 4.0



Future Everything - CC-BY-SA 3.0



Share it



18:13

Contacts

Current Call
Eduardo Lopez 18:13

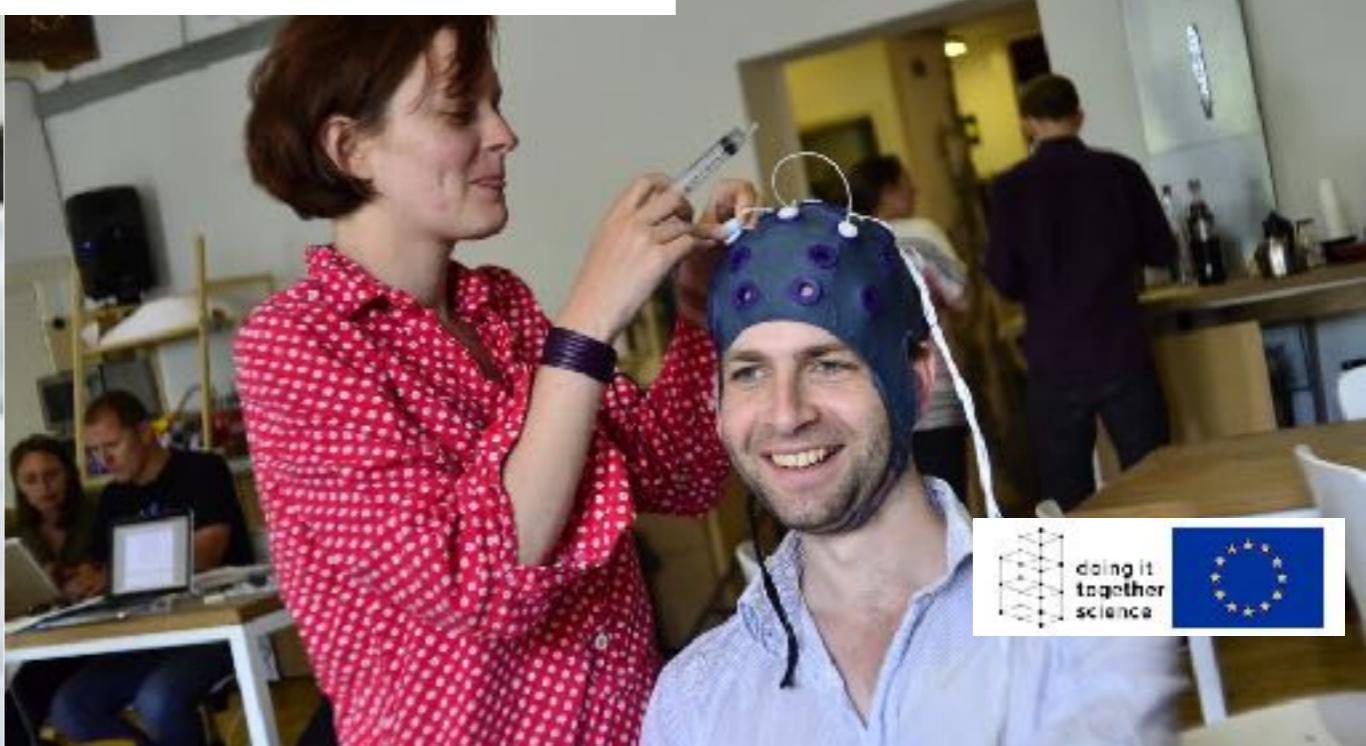
Recent

- Jutta Boenigk 1
- Anneli Amminkert 0
- Anna Rossetti 2
- Wouter Bruins 1
- STX Rabo Plenair 1
- Willem Botha 1
- per_xd 2
- mmppepapkorand... 1
- Cips 1
- Gomit Nizan 1
- Jonathan Mirein 1
- Brosin 1
- Antonella Corbix 1

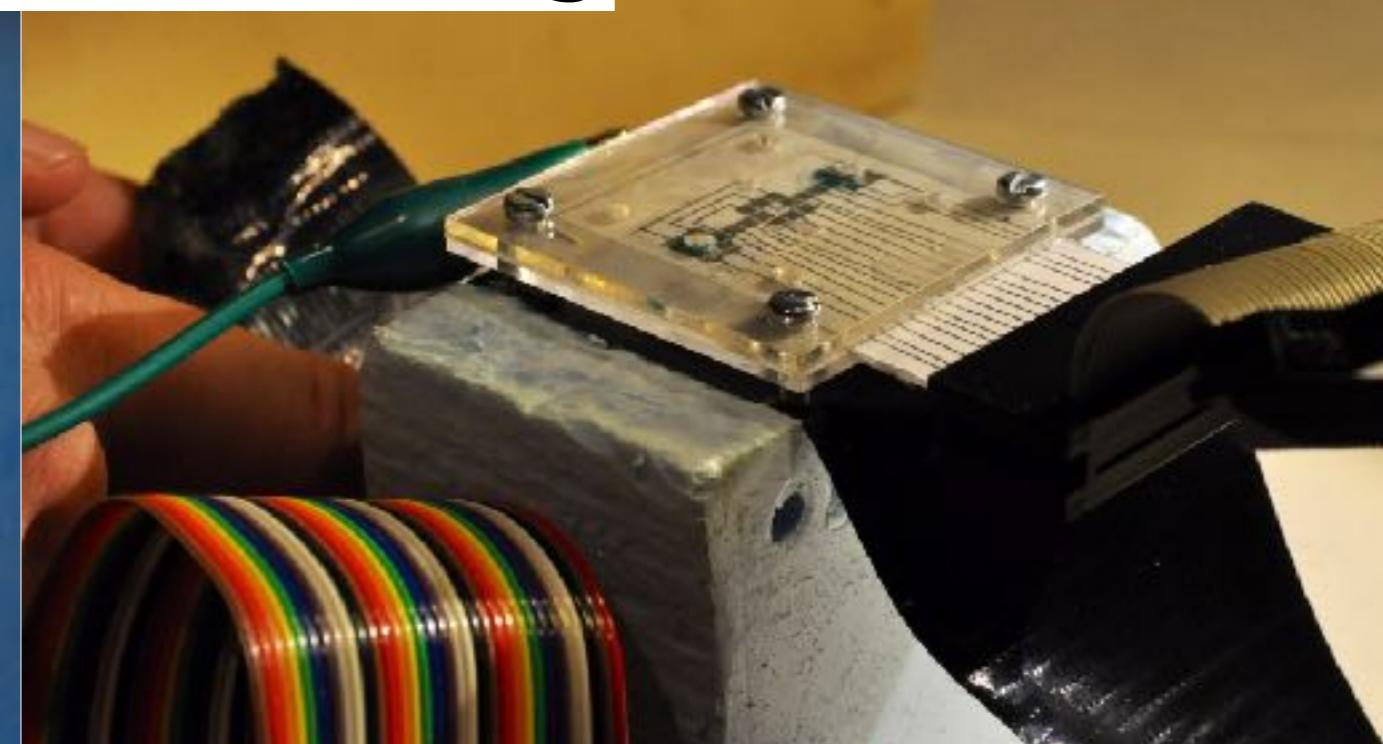
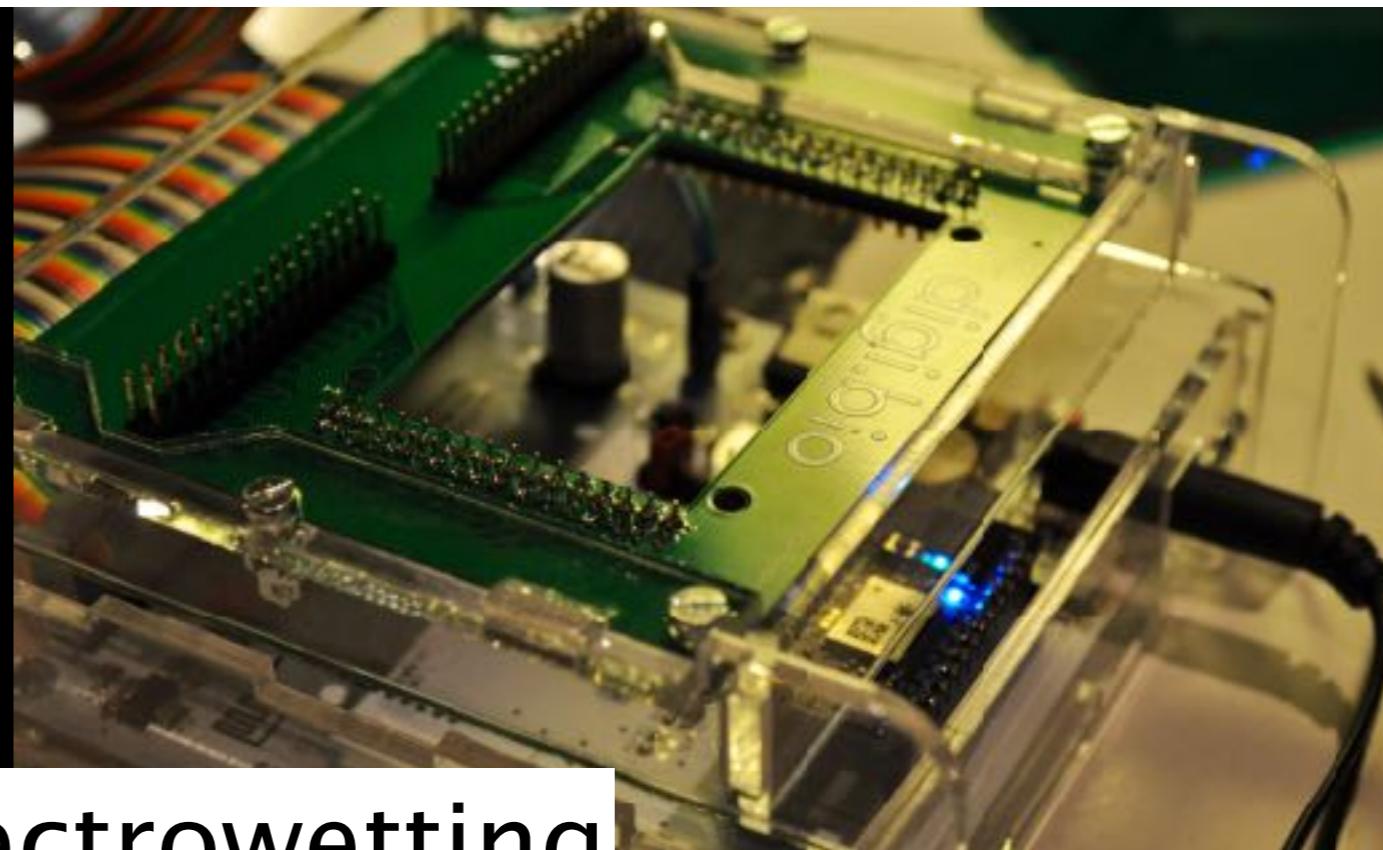
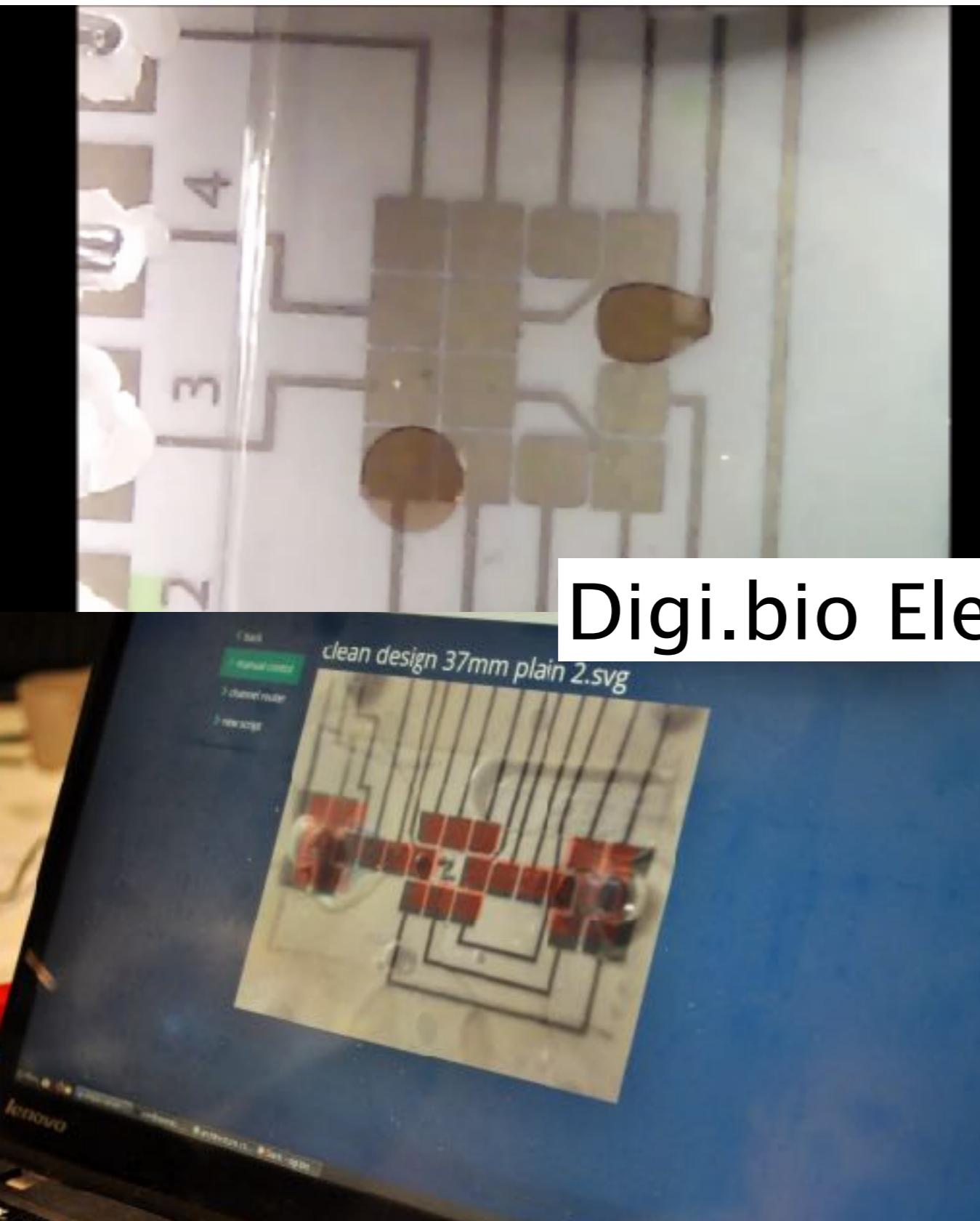




Doing It Together Science



Digi.bio Electrowetting





The goal of this Academy

Skills you will learn:

- Microbiology
- Molecular biology
- Biotechnological reactor design
- Biorefinery
- Spectral analytics
- Bio informatics
- Analog electronics
- AVR microprocessor programming
- 3D drawing and parametric design
- 2D computer aided design
- 3D printing
- Open design licensing
- Chemical and biological safety

Tools you will learn to use:

- All the tools you will build yourself
- Lasercutter
- 3D printer
- Arduino processing language
- OpenSCAD & FreeCAD 3D modeling
- Sketchup 3D modeling
- Fritzing electronic circuit design
- Inkscape 2D design
- Markdown language
- Github



The Team



Pieter van Boheemen



Xiamyra Daal



Lucas Evers



Wieke Betten



Schedule: Classes

1	Introduction	Jan 31
2	Microbiology	Feb 7
3	Physiology & Electronics	Feb 14
4	Biomaterials & Optics	Feb 21
5	Genetics	Feb 28
6	YOUR PROJECTS	March 7
7	Bioethics & Separation techniques	March 14
8	Guest Speaker	March 21
9	Bioinformatics & Spectrometry	March 28
10	Graduation Show	April 4



Schedule: Devices

1 Sterile Hood Jan 31

2 Magnetic Stirrer Feb 7

3 Incubator Feb 14

4 Microscopes Feb 21

5 Thermocycler & Gelbox Feb 28

6 YOUR PROJECTS March 7

7 Centrifuge March 14

8 March 21

9 Spectrometer March 28

10 Pumps & Bioreactor April 4



Schedule: Practicals

1	Digital Fabrication Device construction	Jan 31
2	Cultivating microbes	Feb 7
3	Arduino Microbe isolation	Feb 14
4	Microscopy Biotic Gamina	Feb 21
5	DNA fingerprinting Clonina	Feb 28
6	YOUR PROJECTS	March 7
7	P2P reviewing Chloroplast isolation	March 14
8	Spectrometry	March 21
9	PyMol	March 28
10	Final presentation	April 4



Example schedule: Microbes

1		Jan 31
2	Cultivation	Feb 7
3	Isolation	Feb 14
4	Characterisation	Feb 21
5	DNA	Feb 28
6		March 7
7	Down stream processing	March 14
8	Spectral analytics	March 21
9	Bioreactor	March 28
10		April 4



Weekly Project Meetings

Project meetings to discuss:

1. Develop your own project
2. Set up your own documentation site on Github;
3. Publishing progress;
4. Collaborations with peers;
5. Go through the assignment results;



Syllabus

- <http://biohackacademy.github.io>
 - Lecture Slides
 - Lecture Videos
 - Device blueprints, circuits and code
 - Practical protocols
 - Preparation



Share! Facebook & Discuss

BioHack Academy

Pieter | Home | Find Friends

Pieter van Boheemen
Edit Profile

FAVORITES

- News Feed
- Messages
- Events
- BioHack Academy
- BioHack Academy

APPS

- Games
- Belote.com
- Belote Multijoueur
- Suggest Edits
- Picks
- Saved
- Photos
- Find Friends

PAGES

- Fablab Amsterdam
- Pages Food
- Like Pages
- Create Page
- Create Ad

GROUPS

- Facebook Liberation... 20+
- Create Group
- New Groups

EVENTS

- Create Event

BioHack Academy
Public Group
Joined Share Notifications ...

Discussion Members Events Photos Files Search this group

[Write Post](#) [Add Photo / Video](#) [Create Poll](#) [Add File](#)

Write something...

RECENT ACTIVITY

Pieter van Boheemen changed the type of group: BioHack Academy to Study Group.
4 hrs

Like Comment

Seen by 8

Write a comment... Press Enter to post.

ADD MEMBERS

+ Enter name or email address...

MEMBERS 14 Members (6 new)

Message Invite by Email

DESCRIPTION Edit

BioHack Academy is a global 10 week course on creative biotechnology by Waag Society

GROUP TYPE Study Group

TAGS Add Tags

Add a few descriptive keywords.

OLDER

Pieter van Boheemen made Xiammy Dee an admin.
7 hrs

Xiammy Dee

GROUP CHATS

No group chats, start one now.

+ Start New Chat



**some
rights
reserved**