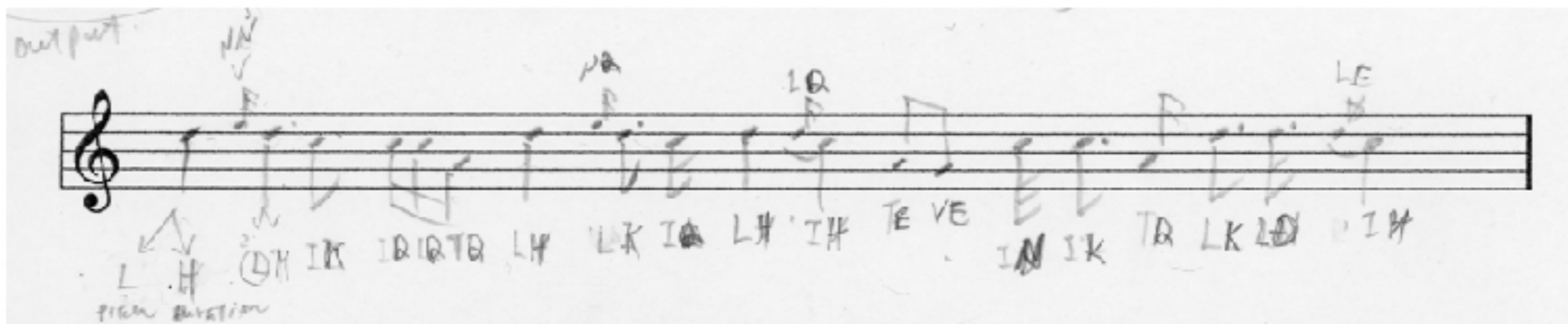


**biohack
academy**



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 (Frequency)	Duration	Pitch (Frequency)	Duration	Pitch (Frequency)	Duration	Pitch (Frequency)	Duration	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

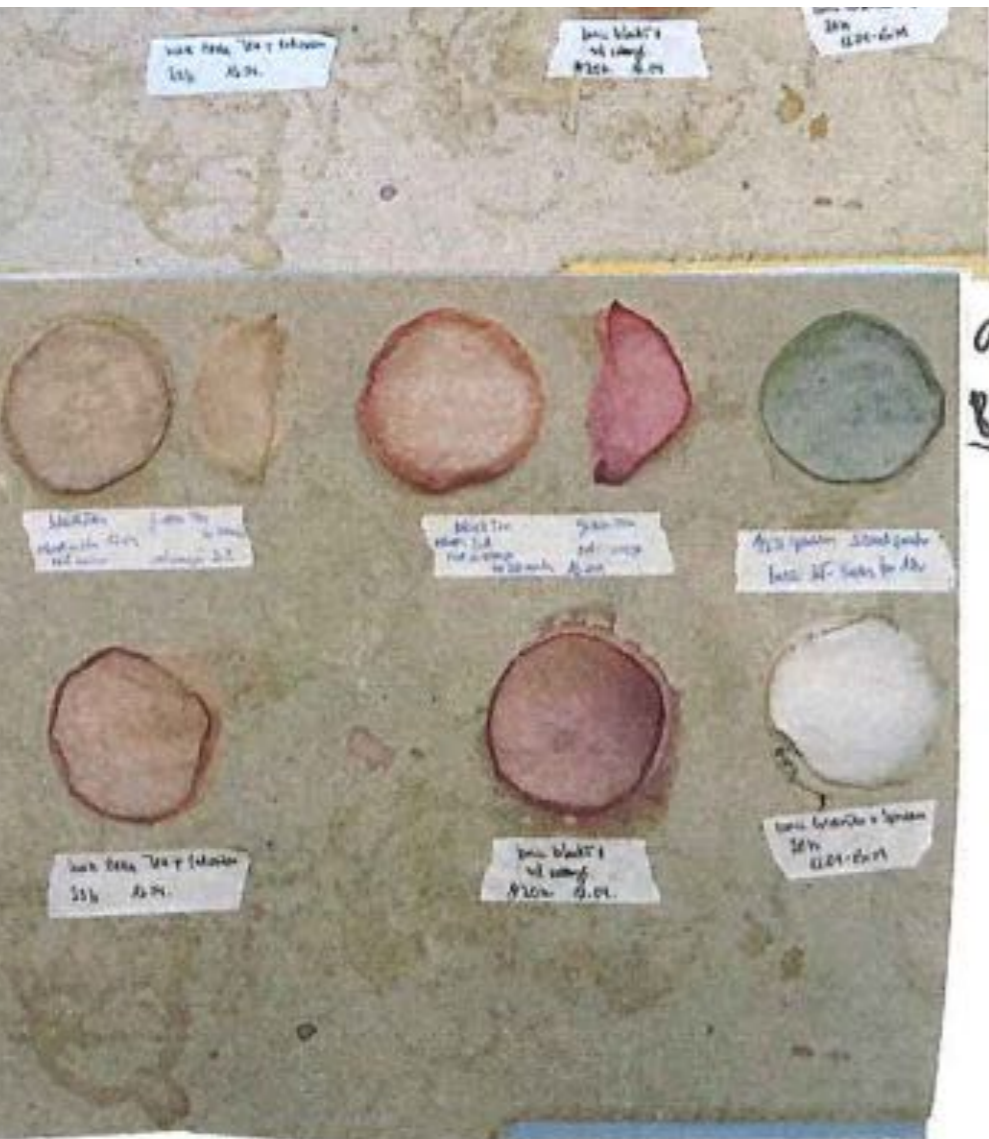


TTACATAATAACTTGATGATTAAAATCCAAATACAG...

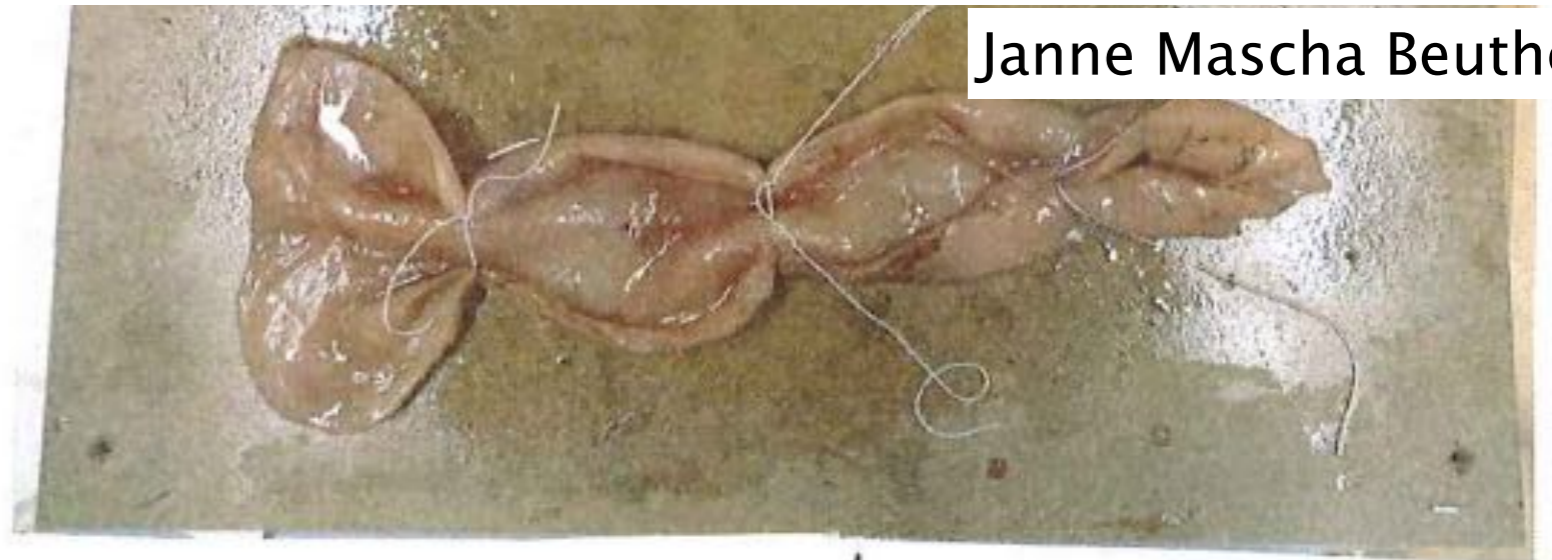


Experimenting with biomaterials

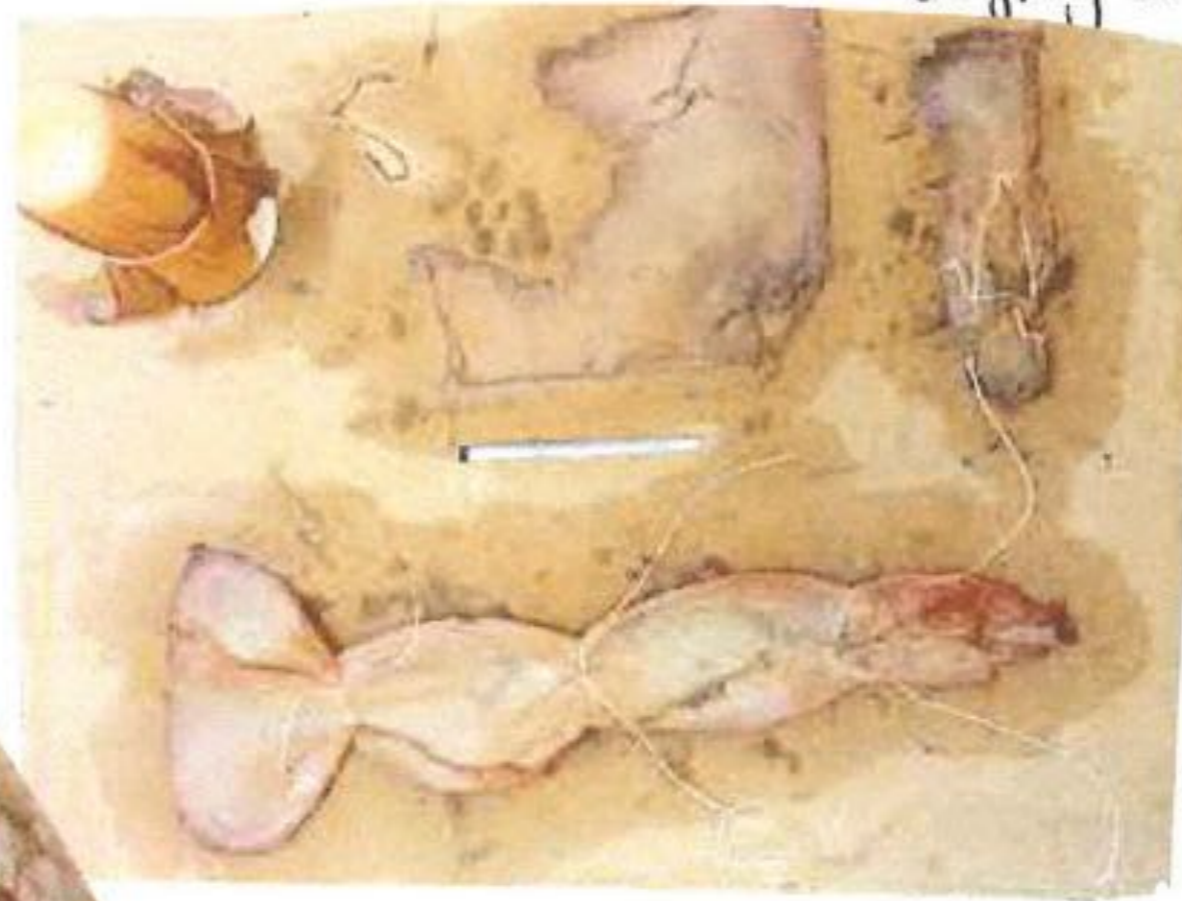
Janne Mascha Beuthel



after
4 days



drying on shape objects
from 15.04



after 4 days
16.04.
cup, piece dry,
the rounded up ones
not dried yet





Design intelligent infrastructure

Jan-Maarten Luursema



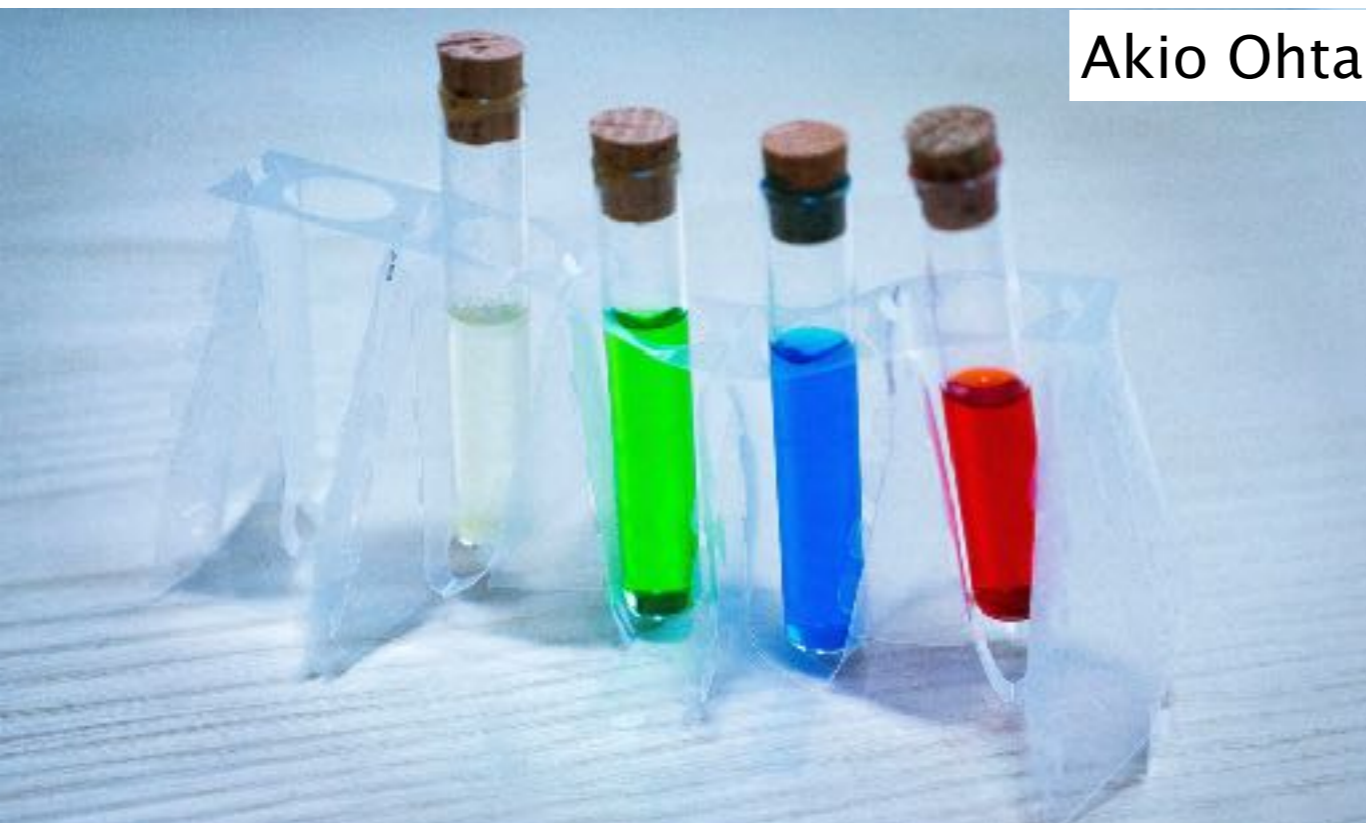


DIY Biohack Academy kit

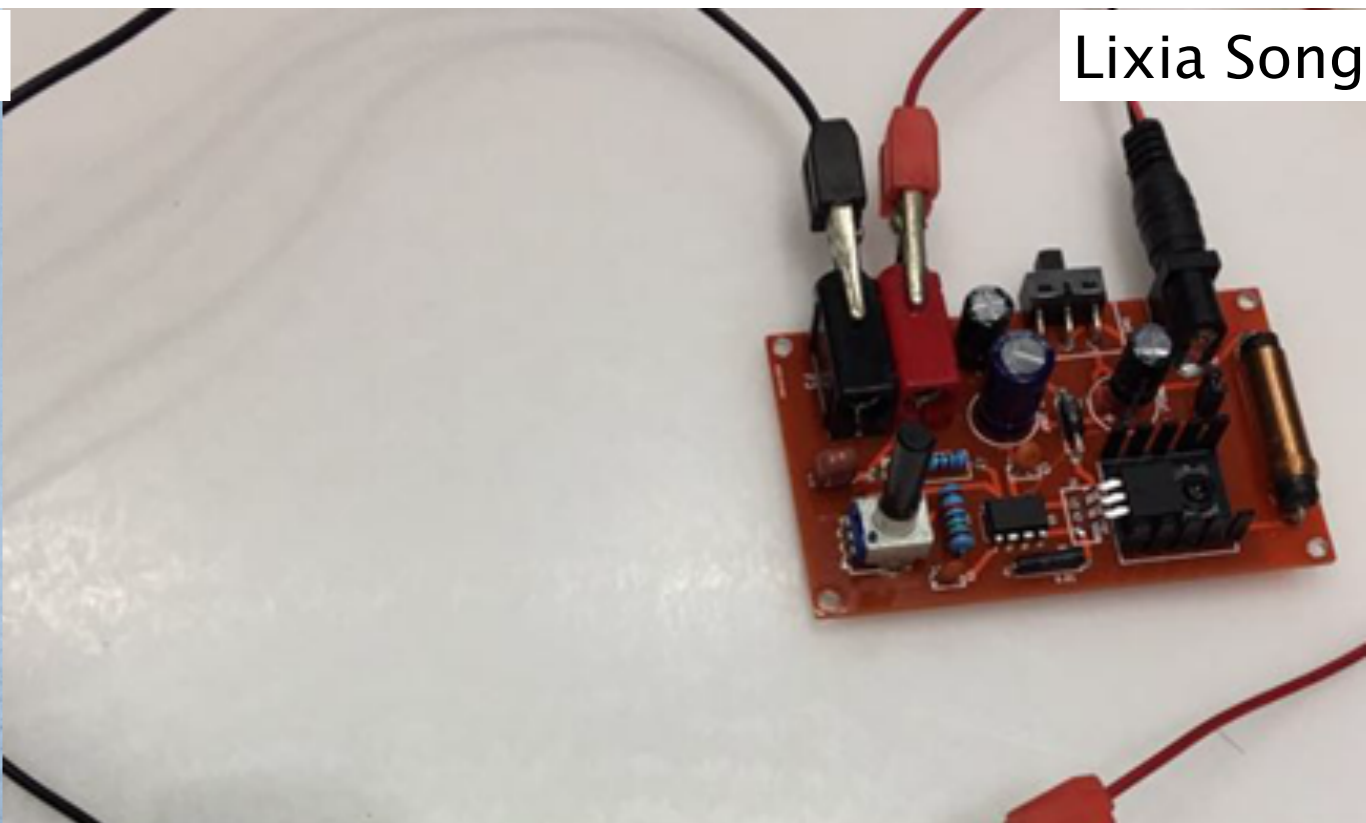




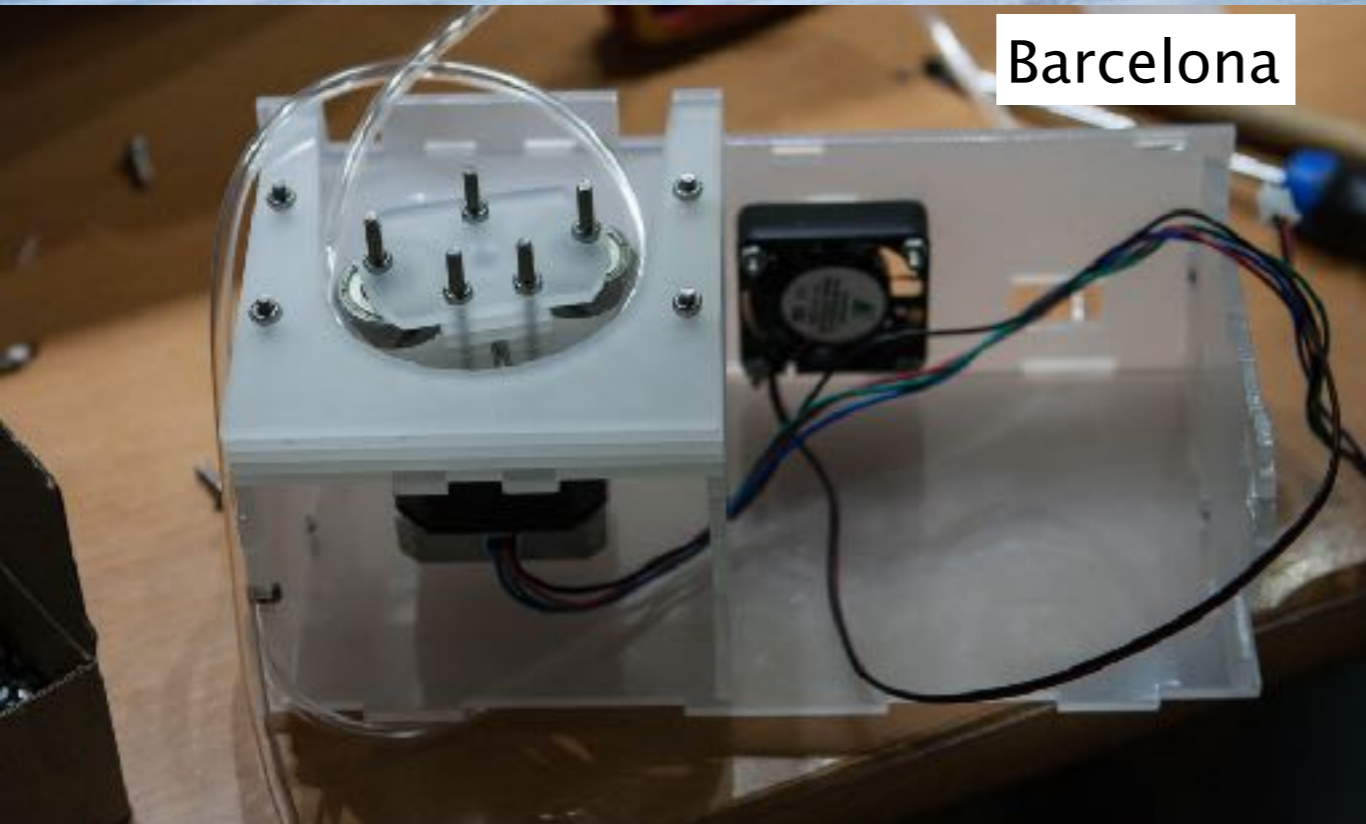
Invent new lab tools



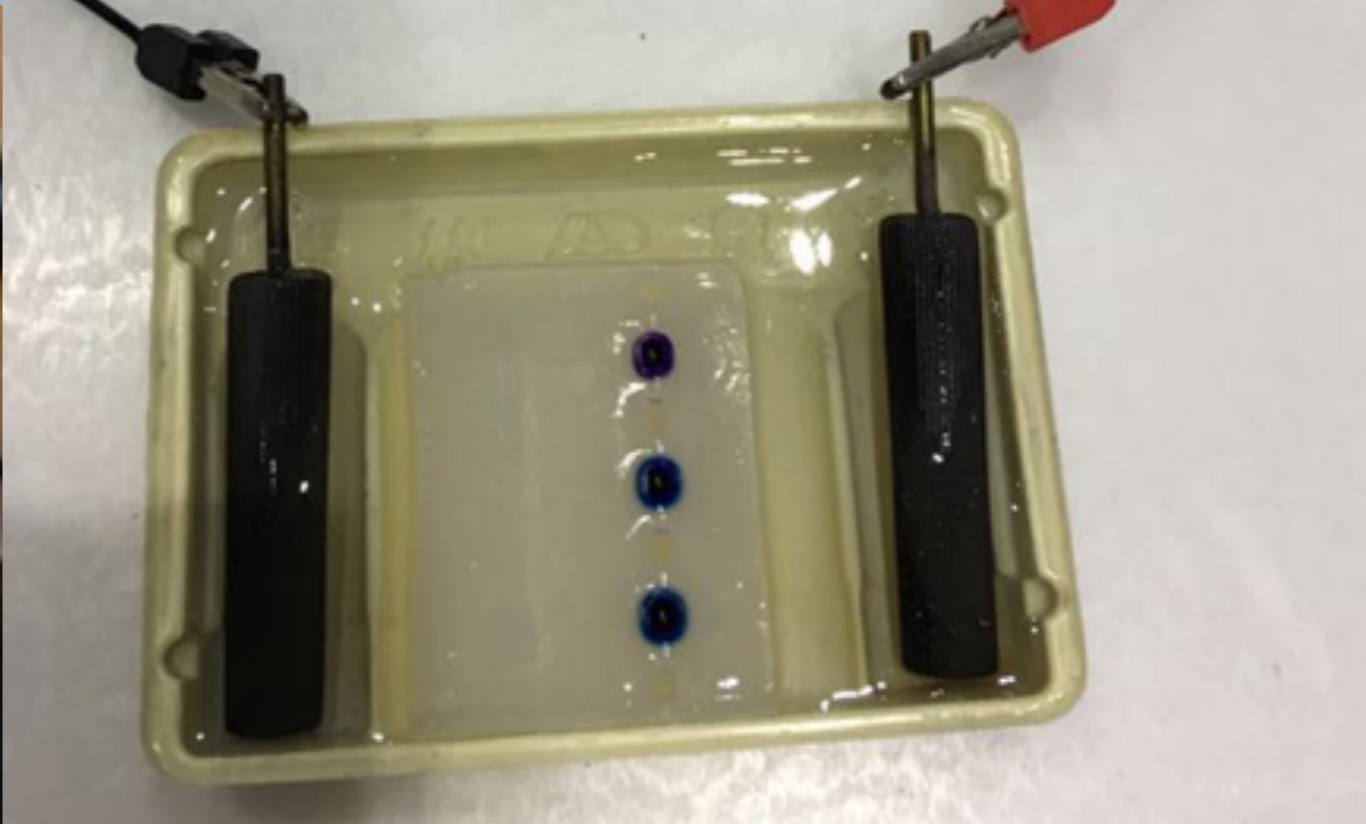
Akio Ohta



Lixia Song

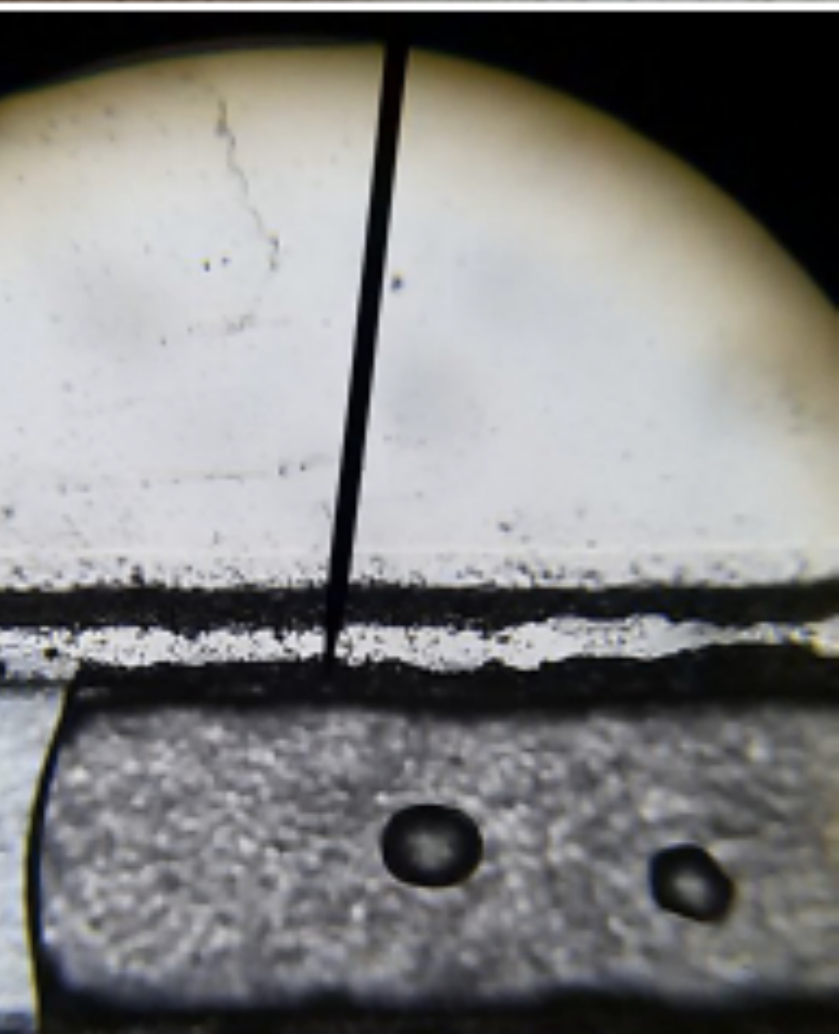
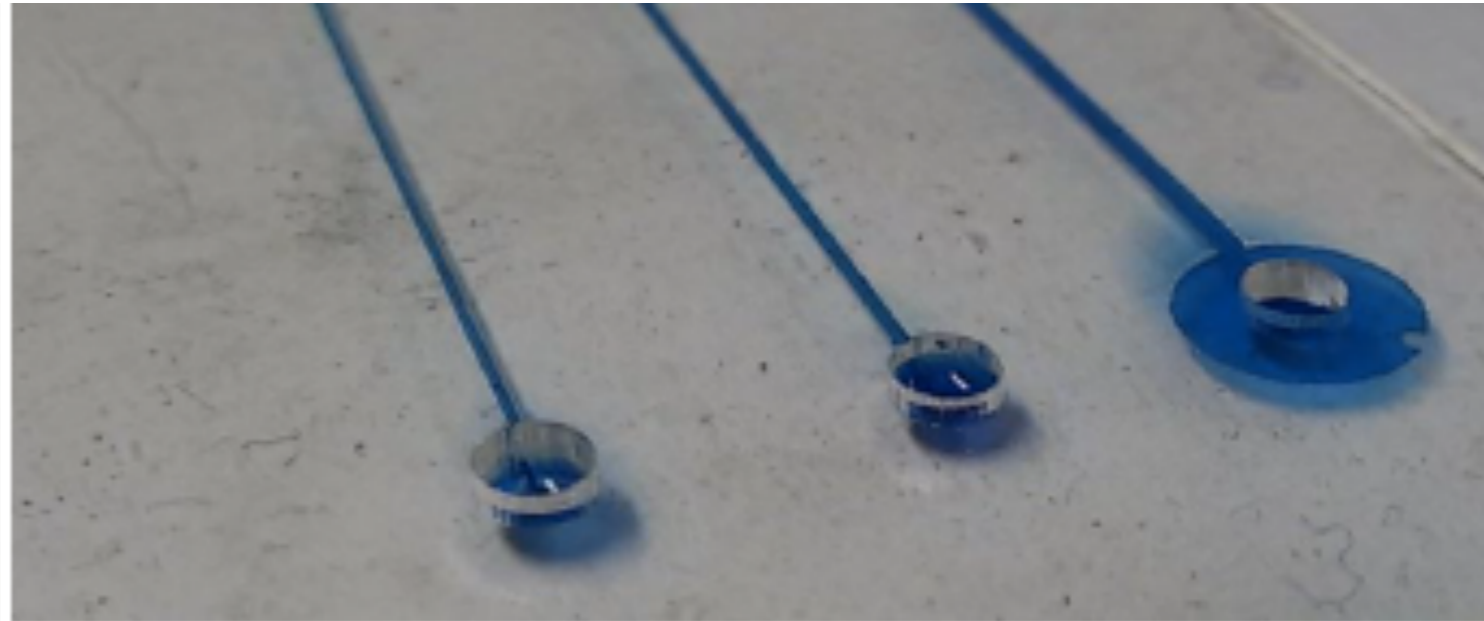


Barcelona





Experiment with microfluidic chips





Kombucha Skin



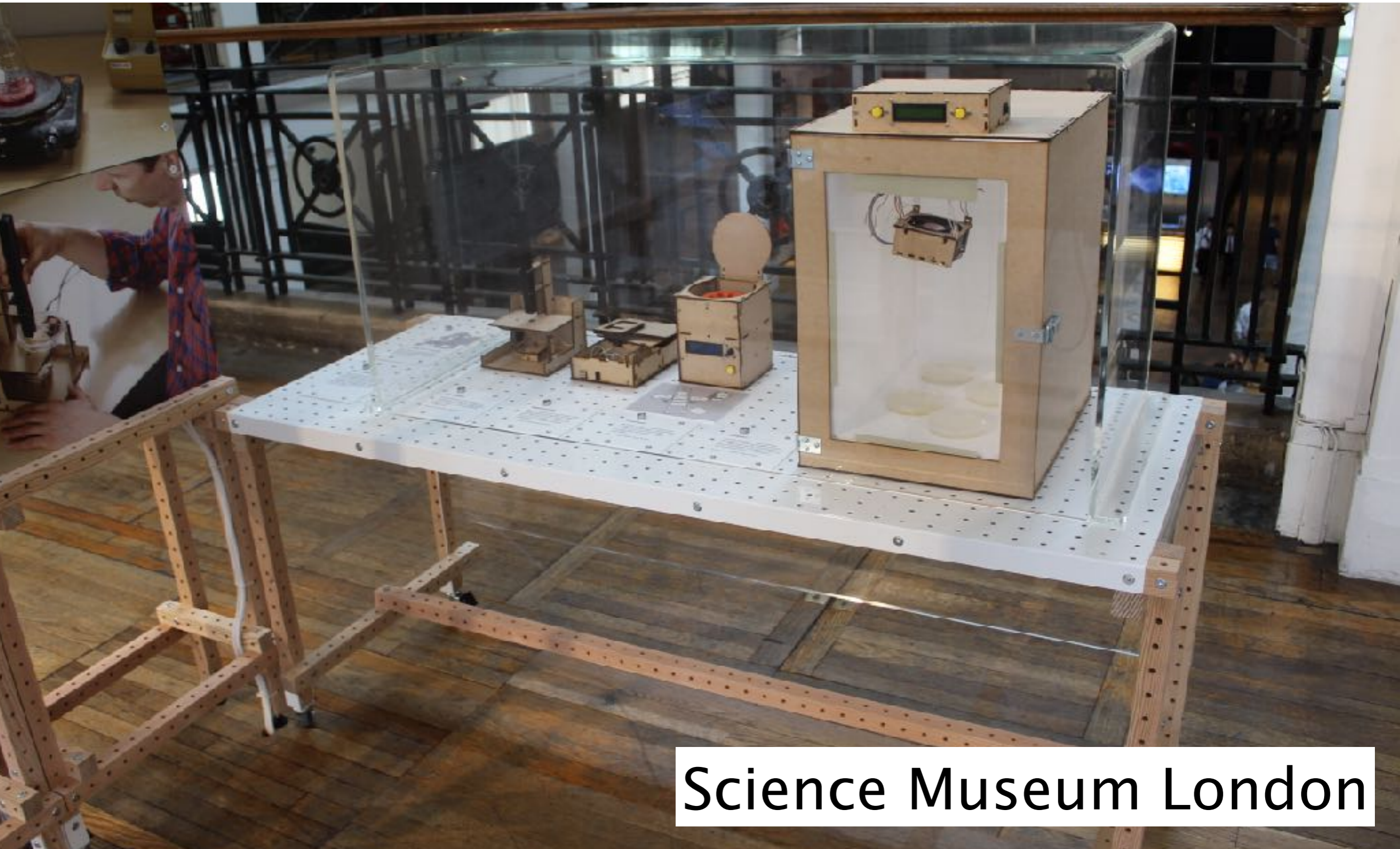


Video track plant growth





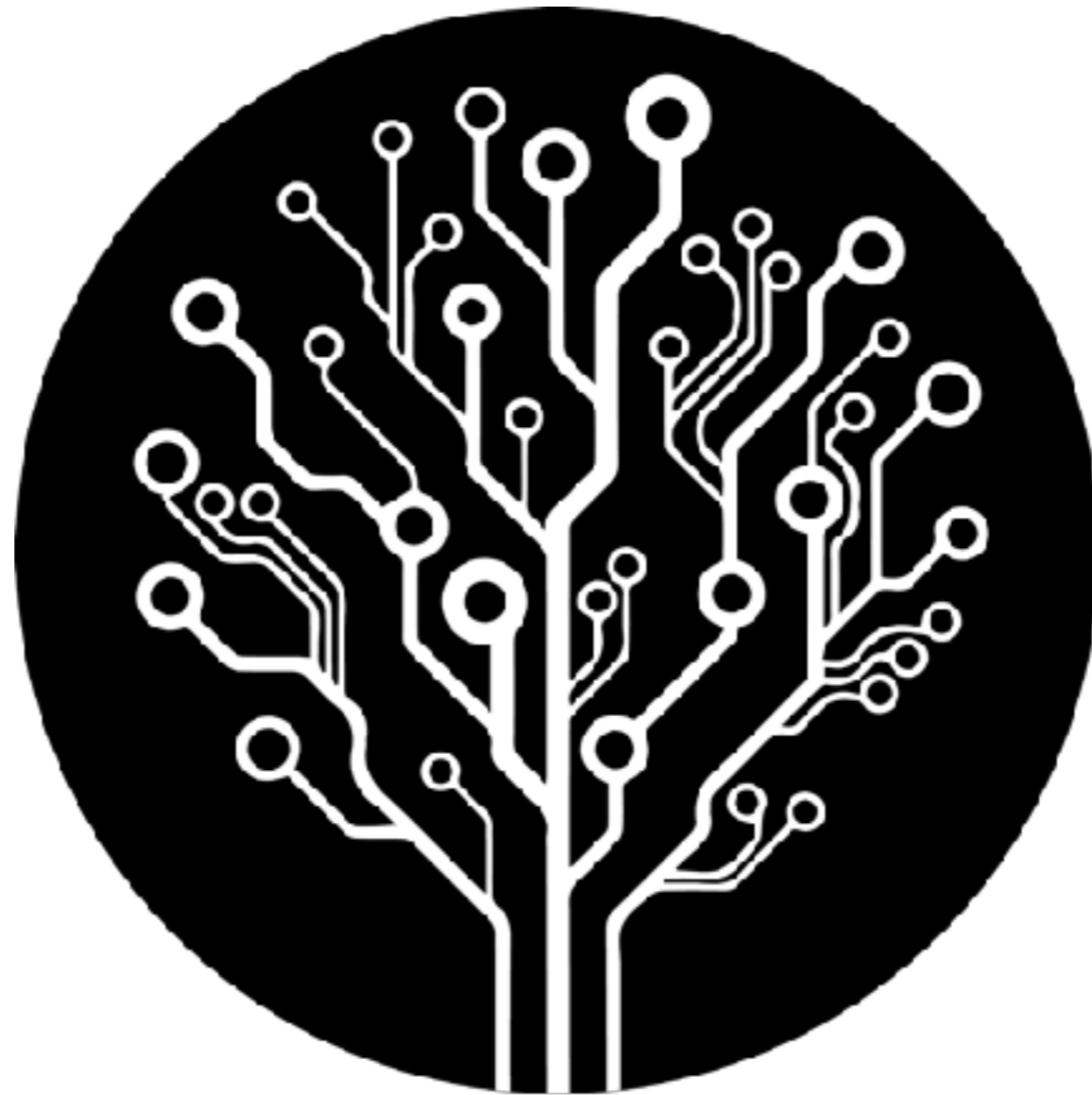
End up in galleries & museums



Science Museum London



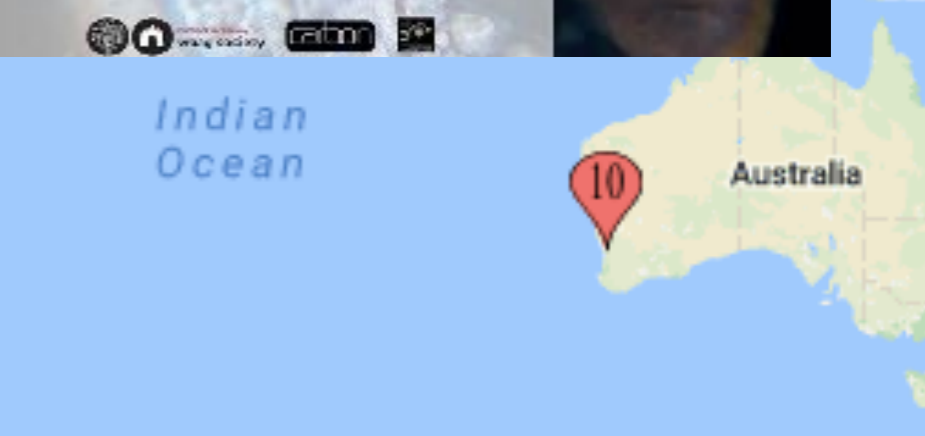
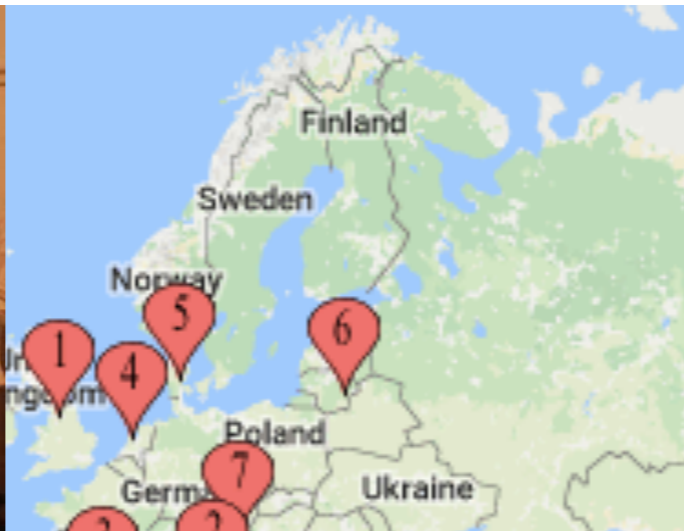
Welcome - ようこそ - 환영 - Welkom



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academy**



BioHack Academy Partner labs





Today's schedule

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



- Biosafety



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

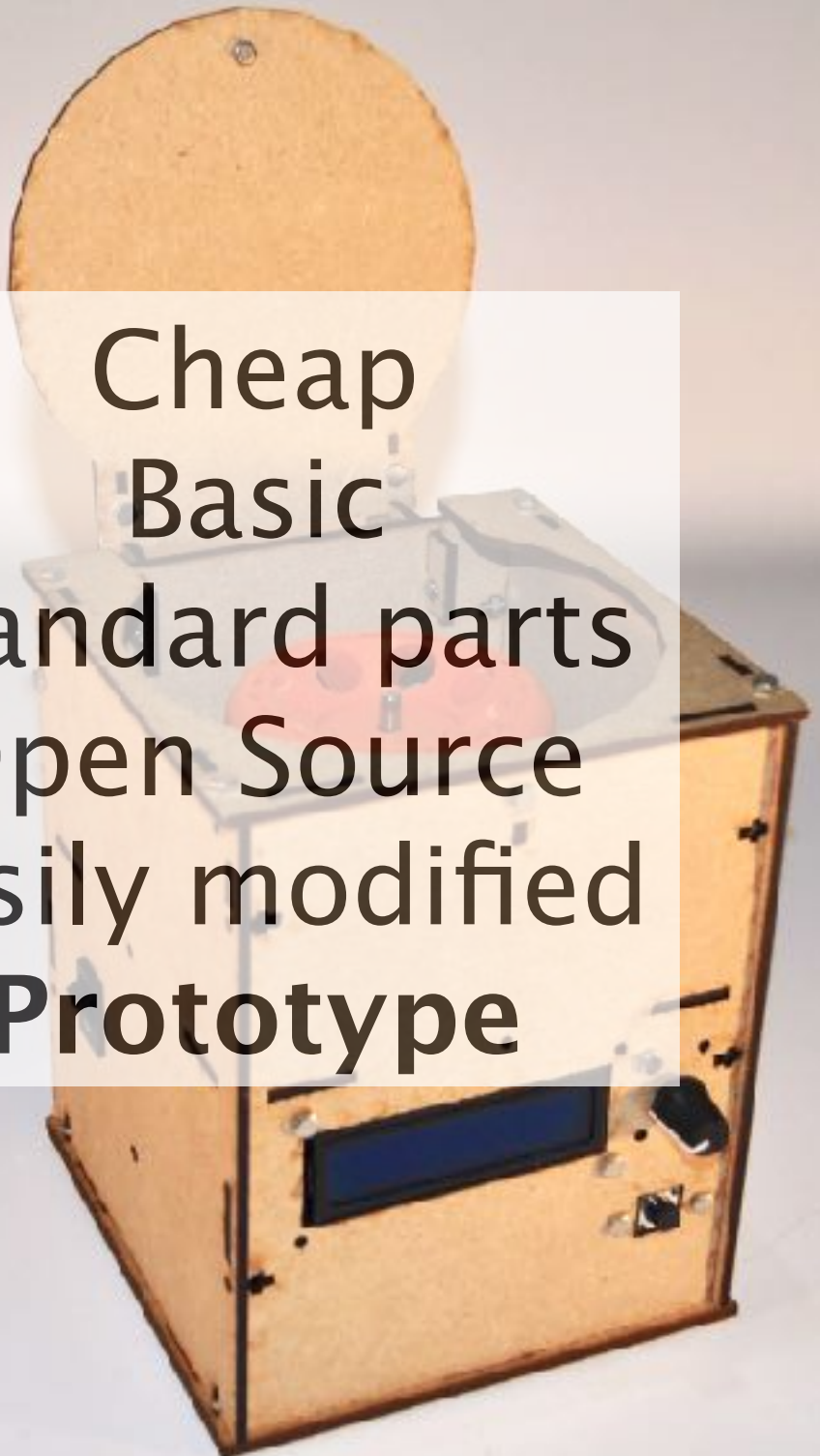
Pictures	pictures + assembly guide	11 months ago
BoM.md	BHA4 update	2 months ago
LICENSE	init	2 years ago
Magnetic Stirrer-Cut-Sheet.svg	BHA4 update	2 months ago
Magnetic-Stirrer-Fritzing.fzz	BHA4 update	2 months ago
Magnetic-Stirrer-Sketchup.skp	BHA4 update	2 months ago
README.md	BHA4 update	2 months ago
Stirrer-Assembly.pdf	pictures + assembly guide	11 months ago

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



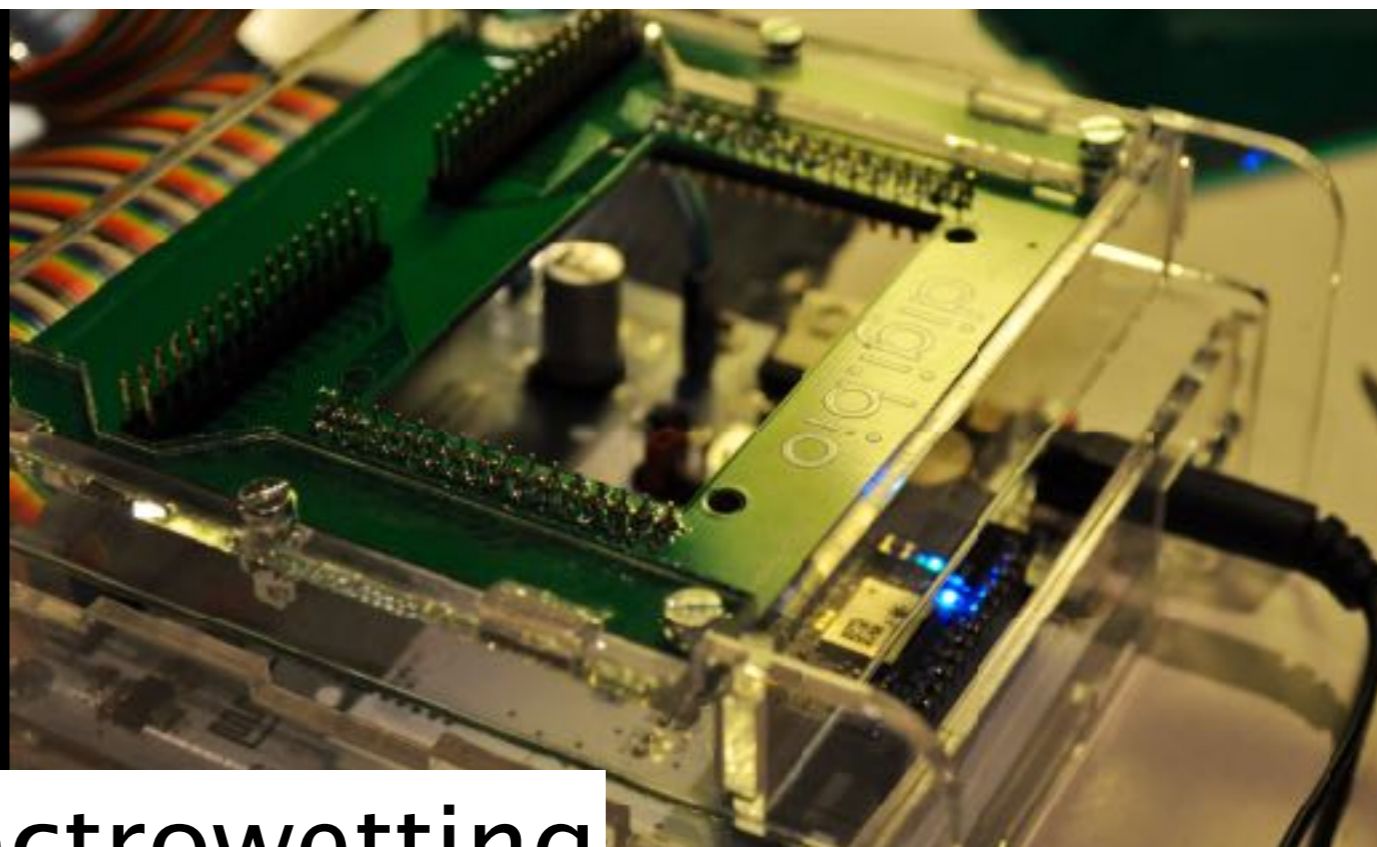
Share it



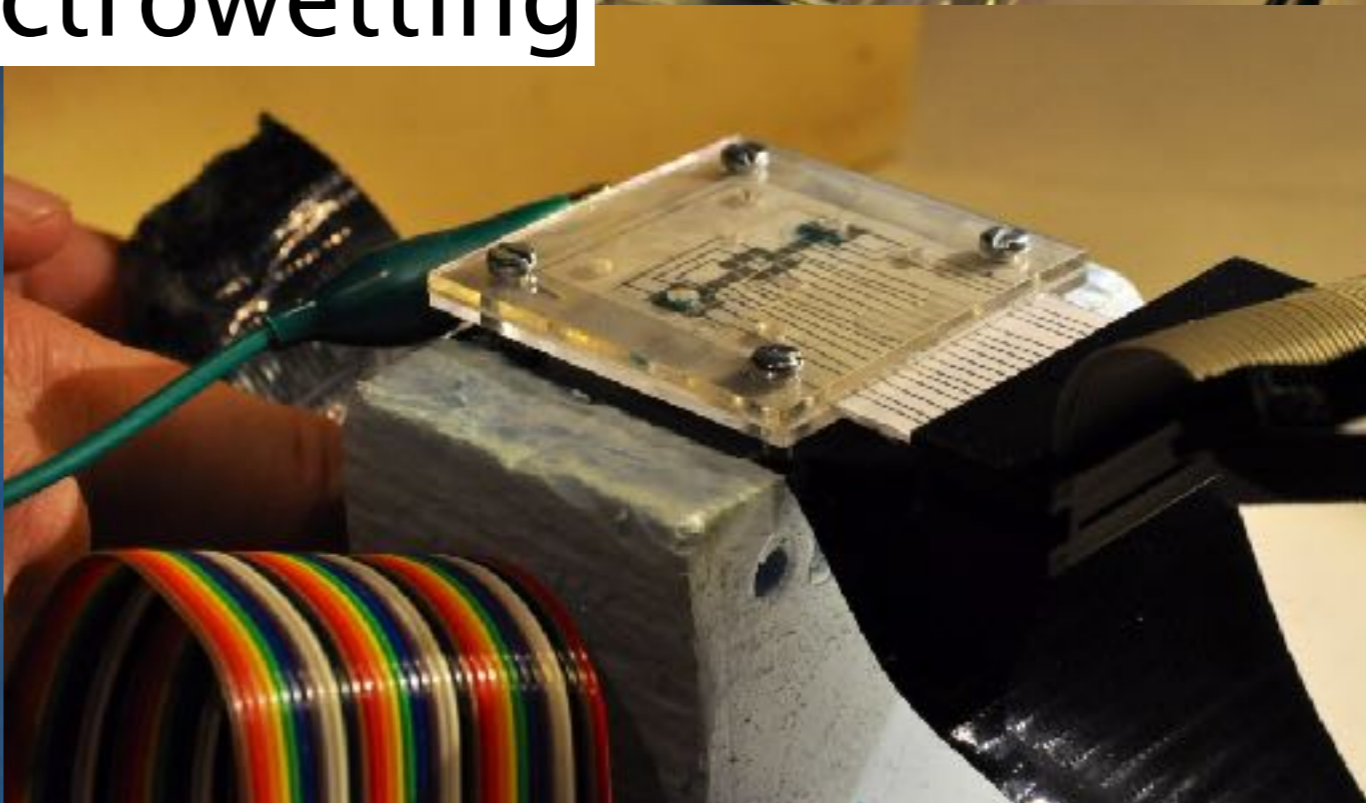
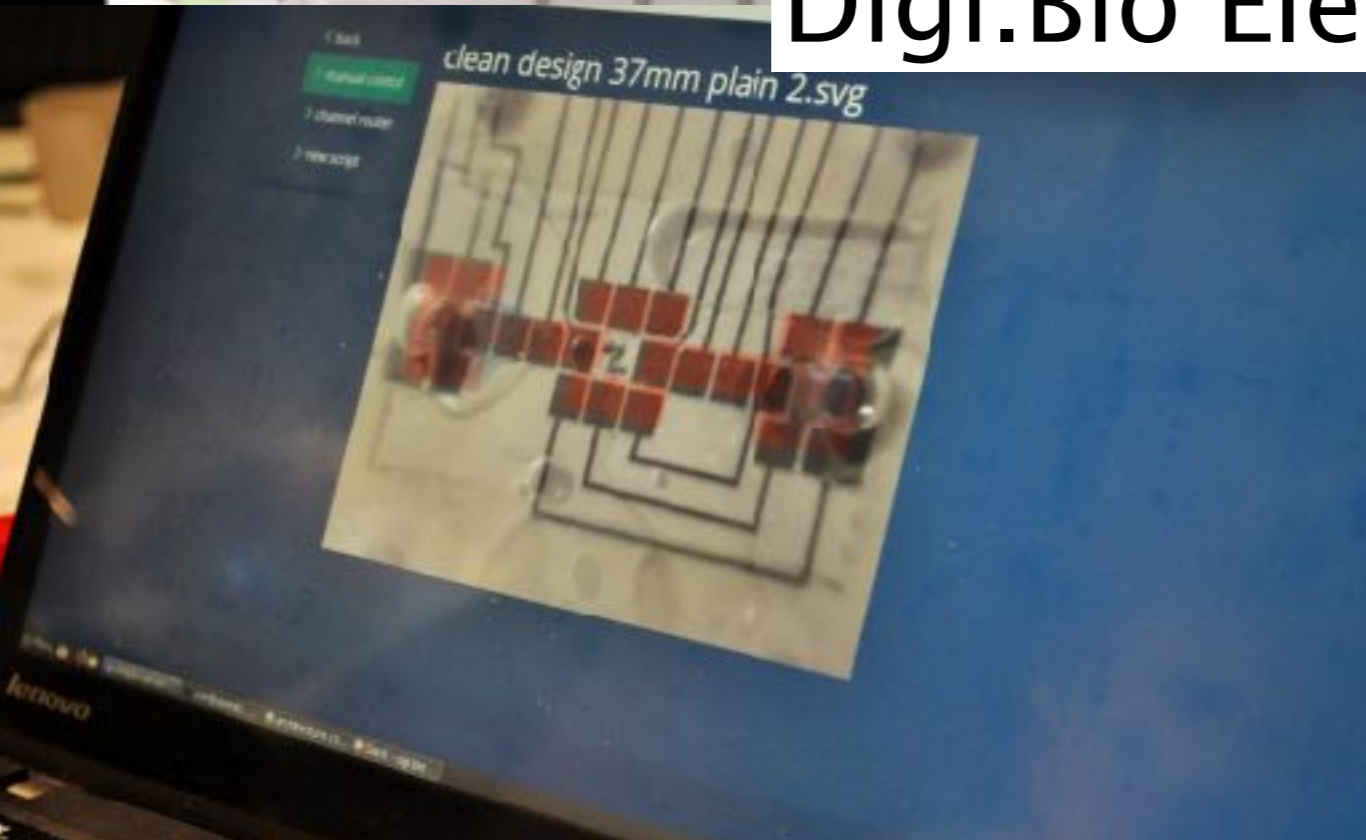


Doing It Together Science





Digi.Bio Electrowetting





The goal of this Academy

Skills you will learn:

- Microbiology
- Molecular biology
- Biotechnological reactor design
- 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 3D modeling
- Sketchup 3D modeling
- Fritzing electronic circuit design
- Inkscape 2D design
- Markdown language
- Github



The Team



Roland van Dierendonck



Per Staugaard



Lucas Evers



Henk Buursen



Schedule: Classes

1	Introduction	Jan 29
2	Microbiology	Feb 5
3	Molecular Bio & Electronics	Feb 12
4	Optics	Feb 19
5	Genetics	Feb 26
6	YOUR PROJECTS	March 5
7	Biomaterials & Seperation techniques	March 12
8	Bioinformatics & Spectrometry	March 19
9	Open lecture	March 26
10	Graduation Show	April 2



Schedule: Devices

1	Sterile Hood	Jan 29
2	Magnetic Stirrer	Feb 5
3	Incubator	Feb 12
4	Microscopes	Feb 19
5	Thermocycler & Gelbox	Feb 26
6	YOUR PROJECTS	March 5
7	Centrifuge	March 12
8	Webcam spectrometer	March 19
9	Bioreactor	March 26
10		April 2



Schedule: Practicals

1	Digital Fabrication Device construction	Jan 29
2	Cultivating microbes	Feb 5
3	Arduino Microbe isolation	Feb 12
4	Microscopy	Feb 19
5	DNA fingerprinting PCR	Feb 26
6	YOUR PROJECTS	March 5
7	P2P reviewing Bioinformatics	March 12
8	Spectrometry	March 19
9	Open Lab	March 26
10	Final presentation	April 2



Example schedule: Microbes

1		Jan 29
2	Cultivation	Feb 5
3	Isolation	Feb 12
4	Characterisation	Feb 19
5	DNA	Feb 26
6		March 5
7	Down stream processing	March 12
8	Spectral analytics	March 19
9	Bioreactor	March 26
10		April 2



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 assignments



Syllabus

- <http://biohackacademy.github.io>
 - Lecture Slides
 - Lecture Videos
 - Device blueprints, circuits and code: Github Repositories
 - Cultivation media
 - Practical protocols
 - **Forum**



Welcome Biohackers!

In BioHack Academy you design, build, use and share your own biolab. Each edition connects several groups around the world passionate about biotech and hacking.

This is the central Syllabus of the BioHack Academy.

Syllabus Navigation

- [Classes](#), for lecture PDFs and videos, information on the BHA devices, practicals and other links
- [Participants](#), links to the personal pages of participants
- [Organisms](#), a list of organisms used in the BHA
- [Cultivation media](#), a list of cultivation media
- [Forum](#), link to the Forum of the BioHack Academy
- [Github repositories](#), Open Source DIYBio lab equipment repositories

Partnerlabs BHA6

The partner labs are

- [Waag Society's Open Wetlab - Amsterdam](#)
- [BioClub Tokyo - Japan](#)
- [The Social Media Workgroup, University of New Mexico - USA](#)
- [Biolab Seoul - South Korea](#)

If you want to get in touch, send us an e-mail: [biohack -at- waag -dot- org](mailto:biohack-at-waag-dot-org)

[Or join our BHA Facebook group](#)

Previous editions

Have a look at the result of previous editions:



Share! Facebook group, Forum, ...

The screenshot shows the Facebook interface for the BioHack Academy group. At the top, the user Pieter is logged in, with navigation options for Home and Find Friends. The group name 'BioHack Academy' is displayed in the search bar and header. The main header image shows a group of people working on a table with various electronic components and tools. Below the image, the group is identified as a 'Public Group' with options to 'Joined', 'Share', 'Notifications', and a menu icon. Navigation tabs for 'Discussion', 'Members', 'Events', 'Photos', and 'Files' are visible. A search bar for the group is also present.

Left Sidebar:

- Profile: Pieter van Boheemen, Edit Profile
- FAVORITES: News Feed, Messages (5), Events (74), BioHack Academy, BioHack Academy
- APPS: Games, Belote.com, Belote Multijoueur, Suggest Edits, Pokes, Saved, Photos, Find Friends
- PAGES: Fablab Amsterdam (2), Pages Food, Like Pages, Create Page, Create Ad
- GROUPS: Facebook Libera... (20+), Create Group, New Groups
- EVENTS: Create Event

Main Content:

- Write Post:** Write something... with options for Write Post, Add Photo / Video, Create Poll, and Add File.
- 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.)
- OLDER:**
 - Pieter van Boheemen made Xiammy Dee an admin. 7 hrs. (Profile picture of Xiammy Dee)

Right Sidebar:

- ADD MEMBERS:** + Enter name or email address...
- MEMBERS:** 14 Members (8 new) with profile pictures and options to Message or Invite by Email.
- DESCRIPTION:** BioHack Academy is a global 10 week course on creative biotechnology by W3ag Society. (Edit)
- GROUP TYPE:** Study Group
- TAGS:** Add Tags. Add a few descriptive keywords.
- GROUP CHATS:** No group chats, start one now. + Start New Chat



some

rights

reserved