

# BioHack Academy Teacher Bootcamp

July 25 – 29, 2016



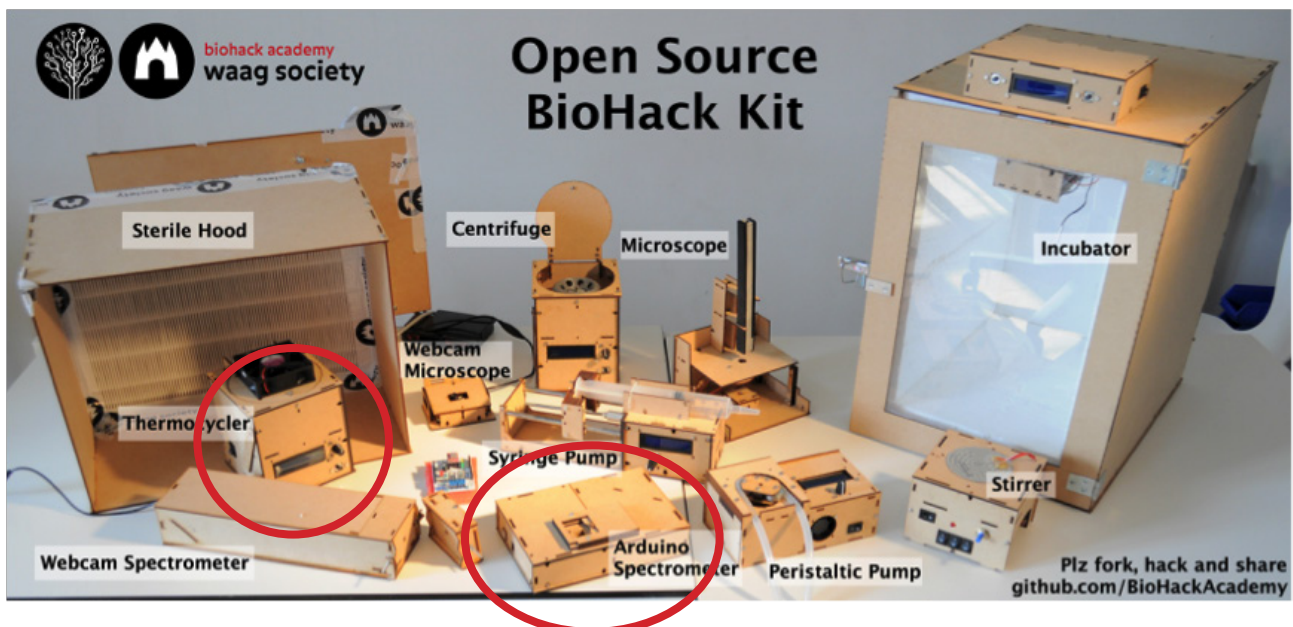
## Open call for pioneering teachers

Interested in what opportunities arise when maker education and biotechnology merge? Apply for this unique summer bootcamp, and join the first pioneering group of teachers that is eager to experience the possibilities in our BioFabLab.

After teaching over 105 adults how to build their own biolab equipment in a makerspace, Waag Society now invites you to join a collaborative effort to make some of the educational materials suitable for kids.

We will go through the complete cycle from design, construction, testing, using and sharing results for two essential devices: photospectrometer and a PCR thermocycler (see illustration below).

In a small group (max. 5) participants, and under the guidance of experienced biohackers Pieter van Boheemen and Xiamyra Daal, you will spend 5 days in the Amsterdam Fablab and Waag Society's Open Wetlab. The bootcamp will be taught in English.





# Program

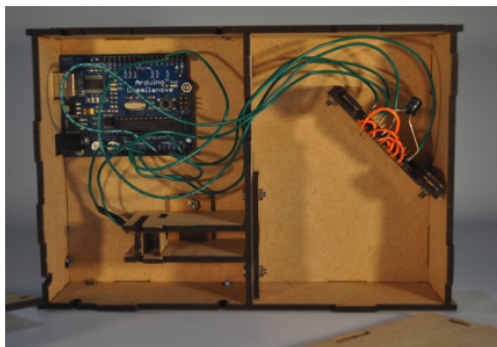
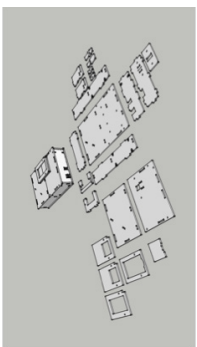
Day	Content
Monday	Introduction to BHA method and pedagogy Spectrometer theoretical introduction Spectrometer electronics & software
Tuesday	Spectrometer assembly and testing • Calibration • Iodine clock reaction Fluorescence hack and testing • Water quality testing
Wednesday	Water quality testing PCR theoretical introduction Thermocycler electronics & software
Thursday	Thermocycler construction Power supply and gel box assembly
Friday	Thermocycler test • Mystery Meat PCR experiment Wrap up

## *Mystery Meat experiment*

What's in your burger? Is it pig, cow, chicken or perhaps horsemeat? With PCR you can find out. We'll use a quick DIY style DNA extraction method after which we will use primers we designed ourselves to identify several types of meat.

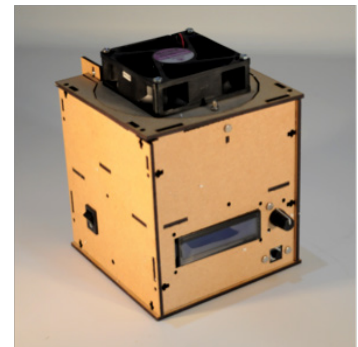
## *Devices*

Each participant will build, assemble and test the following two devices:



### *Photospectrometer*

Current source:  
[http://github.com/BioHackAcademy/BHA\\_Spectrophotometer](http://github.com/BioHackAcademy/BHA_Spectrophotometer)



### *PCR Machine*

Current source:  
[http://github.com/BioHackAcademy/BHA\\_Thermocycler](http://github.com/BioHackAcademy/BHA_Thermocycler)



# Practical information

## *Requirements*

In order to fully participate in this course, participants are required to have a basic understanding of:

- Electronic circuit design
- Arduino / Processing programming
- 3D modeling, preferably in SketchUp
- Optics
- DNA

## *Participants fee*

The fee for participating amounts to 750 euro, which includes:

- Source files of all designs and tuition materials;
- All materials needed to construct the devices;
- Guidance by 2 instructors;
- 2 days of unlimited access to the laser cutter (Tuesday + Thursday);
- 5 lunch meals.

## *Registration*

In order to register you will have to fill in the registration form and fulfill the registration fee of 50 euros right away. The registration deadline is **June 1st**. The remaining costs will be invoiced and need to be fulfilled before July 1st in order to confirm your registration.

**Register here: <http://waag.org/bio>**

## *Instructors*



Pieter van Boheemen is a hacker, artist, engineer, researcher and teacher driving forward Free & Open Source Technologies for social innovation. He leads the Open Wetlab, Open Design Lab and FabLab Amsterdam at Waag Society Institute for Art, Science and Technology. He is an expert in biological technologies, an award winning entrepreneur and world recognized speaker on Biohacking and DIYBio. He has organized dozens of hands-on art science "Do It Together Bio" workshops, founded and let > 150 Dutch DIYBio Community events, runs the micro-organism store PetShop, and presents a YouTube channel on making and hacking things. In 2015 he also established the first international open collaborative distributed biohackers training program, BioHack Academy, supporting the launch of new biohacking groups in the US, Brazil, Japan, Iran and across Europe.



Xiamyra Daal works for the Open Wetlab and coordinates the BioHack Academy and meetings of Do It Together Bio at Waag Society. Xiamyra has studied biomedical sciences at the University of Leiden.