

Name: \_\_\_\_\_

## BioCyberKidzz a Review

A workshop by  
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CREATE YOUR WORLD / Ars Electronica  
Future Festival of the next Generation  
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### 0/ACKNOWLEDGMENTS

The BioCyberKidzz Workshop has been developed as a result of collective brainstorming of many individuals and communities that are devoting their rich experiences in creating the alternative crossovers between arts and science. The dialogues have been encouraged by **HACKTERIA** and **Swiss Mechatronic Art Society** movements as the core initiatives for many open art & science projects which are establishing new meanings to DIY. Within this context the acknowledgments go to **ArtScience Bangalore**, **Nur Akbar Arofattullah/HONF**, **Julian Abraham - Togar/HONF** and **KOELSE** for executing new funky approaches to fermentation/biotechnology. **Sachiko Hirose** and **Brian Degger** for sharing with us their creative perspectives on microbiology as well as **Mackenzie Cowell** for introducing us his original way of understanding the field of body enhancements.

Thanks also to **Jonas Ohrstom/anorg.net** for lending us his vehicle which has an amazing ability to serve us as a mobile lab and a flat at the same time as well as **Cirkulacija2** and **Ljudmila** for sharing with us their inspirational environments where our ideas could be executed to its final point. We are interested in introducing those vivid "invisible" worlds that are, as if they are not seen, very much present in our every day life.  
**Create your world, establish your own point of view at the "invisible" life around us!**

www.hackteria.org/  
www.mechatronicart.ch/  
www.dusseiller.ch/labs/  
www.koelse.org/  
www.natural-fiber.com/  
www.anorg.net/  
www.ljudmila.org/  
www.cirkulacija2.org/  
www.diybio.org/  
www.srishti.ac.in/  
www.artscienceblr.org/

### 1/BioKitchen Lab

#### INTRODUCTION:

The Hackteria BioLab introduces the world of microorganisms, LifeSciences and BioArt to children and adults. Using a hacked microscope as the focal point, the participants are introduced to microscopy, culturing of living organisms and building simple tools to engage with the microscopic and the natural world around them. At the end of the workshop they are able to take home little amulet Petri dishes with their own "living" fingerprints, a yeast powered balloon and simple bio-acoustic ear amplifiers. With these workshops we hope to emphasize that observing life is not just fun, but also takes time and patience.

The children will be introduced to a laboratory environment where the lab becomes less of an intimidating space and more of a space to spark their curiosity.



Hackteria Van, indoor LabWagon, Wine-Factory and outdoor BioKitchen



Maja and Špela cooking the media

### 2/Bacterial Jewelry

#### POTATO STARCH MEDIUM:

Slice potatoes and boil them in 1 L of water for 1 h; drain the liquid through a sieve and gauze to get rid of the potatoes; add 10g of sugar and 13g of agar; stir; pour liquid in glass container, add enough water to the pressure cooker to cover the bottom (0,5 cm); heat under pressure for 20 min; let steam out; pour medium into plates (0,25 cm); let set for at least 4 hours.

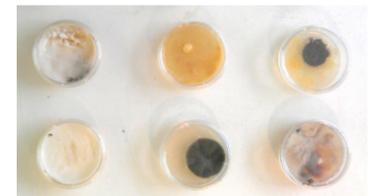
#### MAKING THE JEWELRY:

For the living bacterial jewelry press a finger gently onto the plate, seal Petri dish with hot-glue gun and add string, a ring or a broche needle. Colonies will appear in a day or two, at first bacterial cultures, as the culture ages filamentous fungi will overgrow.

see more on: <http://hackteria.org/wiki/>



Various fungi and bacterial colonies growing from your fingerprint



It takes a few days... be patient.

### 3/Body Enhancements

#### DISCO-on-a-FINGERTIP:

Tightly tape an LED (blinkies, colored or UV) to a 3V CR2025 flat battery. Attach it to a finger with band-aid. With further wiring you can make a switch with the thumb.

#### BIO-ACCOUSTIC EAR AMPLIFIER:

Cut a piece of cardboard in two places, fold to make a shell-like shape, staple or glue. Attach the elastic band and enjoy the improved directional perception of the soundscape. Focus on how much easier it is to locate objects emitting sounds.

#### MAGNETIC FINGER:

Attach a small super magnet to finger with tape or band-aid. Explore the changed sense of touch as you pass over metal objects, electric wires while current runs through them or other magnets. For a more profound effect, do it with your eyes closed.



How to wire up a boy... Hand wired switch to turn on the LED-Finger



Cyber-Ears for directional hearing

### 4/Yeast Powered Balloons

#### ON SITE CO2 GENERATOR aka BLASINATOR II:

Standard recipe for 25 liter "Kilju" (FIN), sugarwine using SuperHiiva. It takes 8 h for the fermentation to peak and lasts approx. 24 h; balloons filled with CO2 don't float very well, as they are heavier than air.

#### TAKE-HOME VERSION:

Add 15 teaspoons of sugar and 1 teaspoon of nutrients, a small chunk of fresh yeast (the size of 1 euro coin) to the water, close lid, shake until the sugar is dissolved; remove cap and place the balloon on top; place in a warm place; it takes about a day to see the balloon blow up.

- \* sugar (5 kg)
- \* fresh baker's yeast (10 packets)
- \* balloons
- \* bottled water (2 trays)
- \* plastic teaspoons (1 bag)
- \* paper (for DIY funnel)



Selfmade sketch of the Blasinator II in the LabJournal. BioTech revisited!



"Kilju" fermentation blowing power

### 5/DIY Microscopy

#### WEBCAM HACK:

By repositioning (screwing it further out) the lens of a cheap webcam you can achieve high magnification. Add a light source, torch or LED for illumination. Show the live video on a large computer screen. Now look at various objects, plants, insects or your own body (eyes, tongue, pimples or hairs)

#### WATERFLEA CIRCUS:

Depending on the season you might catch many waterfleas, *Daphnia*, in a fresh water pond. They are also sold in pet stores. With a size between 0.2 and 2mm they are very suitable and easy to culture for weeks inside a large jar, with some daylight and fresh pond plants, algae and some mud.

#### MAKE/DRAW WHAT YOU SAW:

After looking by eye and with the microscope try to draw the creatures or make small sculpture of them with some colored putty.



Putty to make what you see through the microscope. Nice little Daphnia!



Waterflea circus - lamp jar microscope

### 6/Mobile BioCyberLab

#### STUFF YOU NEED:

#### LAST WORDS / REFLECTIONS:



Lab-in-a-Van, everything in boxes and a bed on top of it.



Unpacking the Hackteria BioKitchenLab

In collaboration with



swiss arts council

prohelvetia

