



# Hackteria Global Network

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## Open Source Biological Art

*Hackteria is a global network active since 2009 of people practicing DIY (do-it-yourself) and DIWO (do-it-with-others) biology, with a focus on art, design and interdisciplinary cooperation. As a online community platform hackteria encourages the collaboration of scientists, hackers and artists to combine their expertise in projects, write critical and theoretical reflections, share simple instructions to work with lifescience technologies with citizen science approach, grassroots and DIY methods. Hackteria looks back on a ten year history of organizing workshops, temporary labs, hack-sprints and open gatherings. Our web platforms, wiki, forum, 2D-virtual world, are online hubs for community interaction, where participants share knowledge on living systems and knowhow on different ways of hacking them. Hacking in our context is borrowed from the term of the Hindi term Jugaad that is a non-conventional, frugal innovation, often termed as "hack", so to deal and improvise when needs are short and not providable. Hackteria has so far been existing on a global scope and not based in a physical space, but since summer 2020 we have established the «Open Science Lab» in Zürich. We want to allow artists, scientists, cooks, farmers, philosophers and hackers to collaborate, test and experiment with science, art and technology outside conventional settings such as academic laboratories and art institutions: basically, anywhere in the world.*



HUMUS Sapiens, various activities, CH / DE / FI  
[https://www.hackteria.org/wiki/HUMUS\\_sapiens](https://www.hackteria.org/wiki/HUMUS_sapiens)



Hackteria Temporary Lab, Garage MCA, Moscow  
<https://www.hackteria.org/workshops/hackteria-moscow/>

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## What is Hackteria – An Overview

### History

Hackteria has started as a wiki-based webplatform and collection of Open Source Biological Art Projects instigated in February 2009 by Andy Gracie, Marc Dusseiller and Yashas Shetty, after collaboration during the Interactivos?09 Garage Science at Medialab Prado in Madrid.

Although there are many similarities between Hackteria and other developing DIY biology initiatives such as DIYBio (diybio.org and diybio.eu), Hackteria is unique in the sense that it expands this DIY biological practice to include the field of the arts. Bio-Art on the other hand, that has flourished in the last decade drawing from a wide range of life science disciplines, many of which are difficult, time-consuming or problematic for artists to fully access. In response to this lack of access, Hackteria develops open source methodologies that make biological and creative practice easily accessible and economical. The original aim of the project was to develop a rich web resource for people interested in or developing projects that involve DIY bioart, open source software and hardware, bioelectronic experimentation and citizen-science practices.

Meanwhile the focus has shifted to continuous activities to extend and strengthen a global network of partners with shared values of radical transdisciplinarity and cultural diversity. The main focus is on the process of interaction between creative people, between professionals and amateurs, providing a stimulant for collaborations; for developing new ideas which connect and embrace the cultural diversities of the participants; and to address societal challenges through experiments with DIWO Culture, with material, technique, and nature through hands-on tinkering, curiosity driven research and never ending inquisitiveness.

For a short introduction check the following movie, which gives a nice overview of the early phases of Hackteria:

<http://hackteria.org/?p=517>

(Video produced by Migros Kulturprozent and Christoph Merian Verlag. You can find the full publication on [digital brainstorming](#))



### What makes Hackteria different?

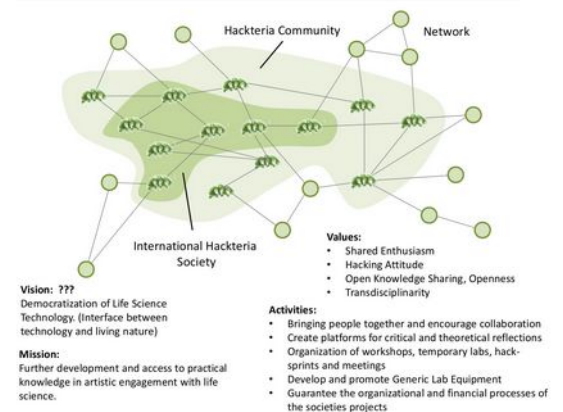
- Hackteria is **GLOBAL**—the virtual knowledge-sharing platform allows learning and participation, which is not restricted by physical location. We have performed workshops in more than 20 countries;
- Hackteria is **DIVERSE**—scientists, engineers, artists, philosophers, entrepreneurs, foodies and chefs, academic and citizen initiatives, young and old(er) bring together their interests and expertise;
- Hackteria is **FACE-TO-FACE**—through workshops we engage a wider audience in art festivals, academic institutions, and the general public, through the HackteriaLab immersive format we experiment and develop of new models for knowledge sharing and collaboration building.

### Global Community – Local Activities

As a community platform hackteria encourages the collaboration of scientists, hackers and artists to combine their expertise in projects, write critical and theoretical reflections, share simple instructions to work with lifescience technologies and cooperate on the organization of workshops, temporary labs, hack-sprints and meetings.

Over the last 10 years Hackteria has been broadening its base of associates and collaborators with the aim of enriching its resources and increasing the possibilities of communication and dissemination of the field. Each member of the Global Hackteria Network has their own individual practice and expertise, which relates to some aspect of bio-art and/or bio-science practices. The network of associates also works as a wide and varied skills and experience base. The combination of these skills, knowledge, expertise and resources gives Hackteria a deep and strong foundation with which to conceptualize and implement its projects, workshops and their dissemination.

HACKTERIA.ORG Open Source Biological Art, DIY Biology, Generic Lab Equipment



### Core Organizers – Project team Switzerland

- **Dr. Marc Dusseiller** (CH), 1975 – Global Ambassador and Coordinator of International Projects
- **Maya Minder** (CH), 1983 – Gasthaus: Fermentation and Bacteria, Artist and Curator



## Short Biographies

### Hackteria Team Switzerland

#### *Marc Dusseiller, Zürich/Global (CH)*

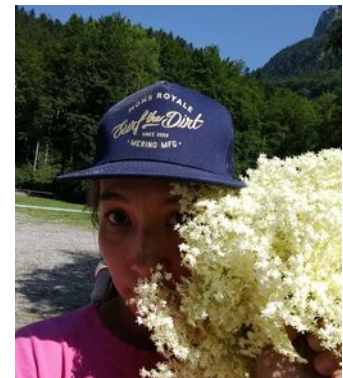
Dr. Marc R. Dusseiller is a transdisciplinary workshopologist, lecturer, cultural facilitator and artist. He performs DIY (do-it-yourself) workshops in lo-fi electronics and synths, hardware hacking for citizen science, bioart / biohacking and DIY microscopy. He was co-organizing Dock18, diy\* festival and poolloop (Zürich, Switzerland), KIBLIX 2011 (Maribor, Slovenia), workshops for artists, schools and children (2008-now) as founding member of the Swiss Mechatronic Art Society, SGMK and is the co-founder of the Hackerspace Collective Bitwäscherei (2020). He has worked as guest faculty and mentor at various schools, Srishti Institute of Art, Design and Technology (IN), UCSB (USA) and in Switzerland, FHNW, ZhdK, HEAD, HSLU, ETHZ. In collaboration with Kapelica Gallery, he has started the BioTehna Lab in Ljubljana (2012 - 2013), an open platform for interdisciplinary and artistic research on life sciences. Currently, he is developing means to perform bio- and nanotechnology research and dissemination, Hackteria | Open Source Biological Art, in a DIY / DIWO fashion in kitchens, ateliers and in the Majority World. He is part of the Center for Alternative Coconut Research developing low-cost educational electronic hardware. He was the co-organizer of the different editions of HackteriaLab 2010 - 2020 Zürich, Romainmotier, Bangalore, Yogyakarta, Klöntal and Okinawa and collaborated on the organisation of the BioFabbing Convergence, 2017, in Geneva, and the Gathering for Open Science Hardware, GOSH! 2016, Geneva & 2018, Shenzhen. He lives and works in Zürich, Yogyakarta and Taipei.



<http://hackteria.org/wiki/Dusjagr>

#### *Maya Minder, Zürich (CH)*

Maya Minder's (b. 1983, lives in Zürich) Gasthaus combines artistic, curatorial, and activist interests into communal culinary events at various locations. For the Klöntal Triennial, she designed the opening dinner and also offers a series of workshops, including a biohacking workshop and a fermentation workshop, over the course of the Triennial's duration. Fermentation repeatedly features as a central aspect of her work, not only literally but also as a metaphor for social ferment, agitation, and incitation to resistance. Minder opposes the structures of food industry by promoting local selforganization, ecological sustainability, and community. She resuscitates traditional food productions methods with a certain relish, saving them from otherwise being forgotten. Her interests span the fields of art, politics, and biohacking, and she often invites other protagonists from these and various other fields to participate in the process of communal exchange. Facilitating interdisciplinary, intercultural dialogue amongst the participants is one of the primary goals of her practice.



<http://www.mayaminder.ch/>

## International Hackteria Society

### *Company Information*

Under the name "International Hackteria Society", is an association according to article 60ff of the Swiss Civil Code (ZGB) with seat in Zürich. The association aims to guarantee the organizational and financial processes of the project "Hackteria | Open Source Biological Art". It wants to further development and access to practical knowledge in artistic engagement with the lifesciences. It wants to create platforms for public discussions and invite international artists and scientists for critical and theoretical discourse. The association works as a non-profit organization to reach its aims.

Unter dem Namen «International Hackteria Society» besteht ein Verein im Sinne von Artikel 60 ff. ZGB mit Sitz in Zürich. Der Verein bezweckt die organisatorischen und finanziellen Abläufe des Projektes "Hackteria | Open Source Biological Art" zu garantieren. Er will Entwicklungen und den Zugang zu praktischem Wissen im Bereich der künstlerischen Auseinandersetzung mit den Lebenswissenschaften fördern. Er will Plattformen zur öffentlichen Diskussion schaffen und international Künstler und Wissenschaftler zu einem kritischen und theoretischen Diskurs auffordern. Der Verein arbeitet nicht-profitorientiert um seinen Zweck zu erfüllen.

Company Identification Number (UIDG):

CHE-192.885.318

<http://hackteria.org/wiki/IHS>





## Selected Projects

### Hackteria ZET – Open Science Lab

Since summer 2020 we have initiated a new local programme in Switzerland under the name «Hackteria – Zentrum für Experimentelle Transdisziplinarität» and we proudly started a new space, as part of [Bitwäscherei](#) shared hackerspace collective, with dedicated facilities for the [«Open Science Lab»](#).

A laboratory, a social learning space, a place of work and research, a transdisciplinary meeting point for designers, hackers, artist, foodies and fermentation activists.



The new lab has already attracted a lot of interests over the last months and a regular programme of weekly meetings, discussion panels and dedicated workshops on life science related topics for artists is being developed. In the time of the pandemic due to COVID-19 and the restrictions on travel and events, we have developed various tools for «hybrid» learning events, combining both the physical lab, streaming video equipment and our online 2D virtual world using the open source software workadventure.

Visit our [virtual hackteria islands](#) online!

### Hackteria ZET – Research Nodes

We have a very active [discussion forum](#) for connecting the local research activities to the Global Hackteria Network.

#### *Open Science Hardware / DIY Laboratory Instruments*

Turn a cheap webcam into a useful microscope? PCR thermocycler made from electronics trash?

**Collaborators:** Marc Dusseiller, Urs Gaudenz, and the Global Open Science Hardware network

#### *Biofabrication / Growing Garments*

Grow your furniture with fungi? Fashion and textiles grown from bacteria?

**Collaborators:** Kaspar König, Maya Minder, Corinna Mattner, Aline Ochoa, Shih Wei Chieh 施惟捷 (TW)

#### *Synthetic Biology / Pharming / (Do-It-Yourself) DIY-bio*

Can bacteria create the smell of a banana? Yeast cells that produce pharmaceuticals?

**Collaborators:** Stefan Deuber, Marc Dusseiller, Student Group ZHAW Wädenswil and more

#### *ReproTech & Art / Germline Hacks and Designer Babys*

The Creative Germline Constructs Bank (CGCB) and a Generic Open-Source Plasmid for Human Arts (GOSPFA)

**Collaborators:** Adam Zaretsky (USA), Cristian Delgado (MX), Paula Pin (ES) Marc Dusseiller

#### *How to Grow Your Own Meat*

Basic skill and infrastructure for tissue culture, growing cells, primary organoids and DIY biosafety cabinets

**Collaborators:** Marc Dusseiller, Nemo Bleuer



## Hackteria Labs 2010-2020

Hackteria Labs are concentrated gatherings of people working transdisciplinary who are interested in creative biological fields and any other areas which intrigue the critical interaction across art and science. They have been providing vessels which create international networks and potential collaboration to emerge and flourish. HackteriaLab's main focus always has been on the process of interaction between creative people, between professionals and amateurs, providing a stimulant for collaborative processes; for developing new ideas which connect and embrace the cultural diversities of the participants; and to address societal challenges through experiments with DIWO Culture, with material, technique, and nature through hands-on tinkering, curiosity driven research and never ending inquisitiveness.



[HackteriaLab 2014](#) was held in April 2014, in Yogyakarta, Indonesia. A number of smaller events, workshops, residencies and exhibitions predated the main collaborative lab-phase. It was the fourth edition of an intensive two-week transdisciplinary collaboration amongst international and local artists, hackers, activists, scientists, and designers. HackteriaLab 2014 expanded on ideas and methodologies about BioArt, DIY biology, Appropriate Technology, ArtScience and BioHacking, developed during the previous versions of HackteriaLab 2011 - Romainmotier and HackteriaLab 2010 - Dock18/Zürich in Switzerland and HackteriaLab 2013 - Bangalore in India. Later followed by BioHackRetreat Klöntal in 2017 and [ハクテリア 合宿 – Oki Wonder Lab](#) in 2020.

## Workshops, workshops, workshops.... Towards a truly transdisciplinary Workshopology

Our main activity over the years has definitely been the development of new methodologies for [doing workshops and the documentation of them](#). We have widely interacted with public audiences and learners through sometimes performative engagements, constructivist open-ended learning environments or step-by-step making sessions of DIY laboratory equipment.



Impressions from „[Make-Your-Own CRISPR-Babies](#)“ at swissnex, San Francisco; and „[Wormolution](#)“ at 1000 Ecologies, Geneva.





## Artworks fertilized from the Hackteria Network

### *Escaping the Digital Unease – Hackteria @ Kunsthaus Langenthal, 2017*

*“Since the beginning of the web, artists have built their own spaces and channels there. They have created artworks that reacted to commodification and restrictions in a critical way. The exhibition presents works from over 30 artists and collectives tackling these topics, raising awareness to the unease, showing its causes or possibilities of an escape from it.” [See more here.](#)*



*“In Switzerland, India, Indonesia and lots of other locations, artists, scientists, musicians and nerds have been working together since 2009 on the ‘Hackteria’ network. Founded by Marc Dusseiller (Zurich), Yashas Shetty (Bangalore), Urs Gaudenz (Lucerne) and Andy Gracie (Barcelona), with the goal of embedding animate material such as bacteria in artistic processes, ‘Hackteria’ has grown into a hub for the free exchange of knowledge in the fields of biotechnology and bio-hacking, thereby spawning hundreds of workshops, instruction manuals, and experiments spanning several continents. Biotechnology is generally associated with major pharmaceutical companies or universities but, here, it is made tangible and easy to grasp, not least because talk is often of traditional biotechnologies, such as the art of fermentation. Projects range from making cheese to mobile laboratories, from robots to malaria vaccines, to say nothing of advances in genetics and nanotechnology. One long-standing attraction, for example, is a digital microscope from a converted webcam, which has played a role to date both in audio-visual performance and academic research laboratories, and is still under constant development by the community. Hackteria is a lively example of what can happen when knowledge production and exchange are respected as a common resource, accessible to all; and it thus marks a major contrast to the covetous concentration and commodification of knowledge by a handful of corporate giants, such as Google & Co.”*

Texts by the curator Raffael Dörig



## DIY Laboratory Instruments and Open Science Hardware

To start up an independent and open lab it is crucial to get [affordable lab equipment](#) (besides having an enthusiastic and open group of people). Most of the tools we use are do it yourself (DIY) and open source and are built from widely available and recycled parts found in consumer products such as DVD drives, webcams, hard disks and pc fans. Building the specific devices further helps to understand the basic principles behind and learn more about the technologies and methods used. The discussions among scientists and engineers in the process of rethinking the devices to make them more accessible are very fruitful and often lead to new and innovative designs.



A more advanced example of an open science hardware project is „[OpenDrop](#)“, which is part of a bigger ecosystem around digital biology with the aim of making personal lab-automation accessible to more people. Being a community project grown out of the hackteria network activities and the DIYBio movement we have been building on trustful co-operation with all people interested in the project. We also welcomed collaboration with existing business initiatives and academic research projects. The project is developed in parallel on different aspects and disciplines. Technical developments are paralleled by biological application research and community management.

## Co-Organisation of (Un-)Conferences

For various larger international events we have been collaborating with partners from research universities, businesses and other independant networks to co-organize gatherings and un-conferences. In 2017 we have co-initiated the „[BioFabbing Convergence: Fabrications and Fabulations](#)“, together with the group „Rethinking Science and Public Participation“ from University of Geneva, CERN's Citizen Cyberlab and Hackuarium, the regional and only biohackerspace in Switzerland. Our role to connect such partially academic and local events to our larger global network of activists, artists and independant researchers, and our experience in practically organizing and managing cultural events was very important to the success of our endeavours.



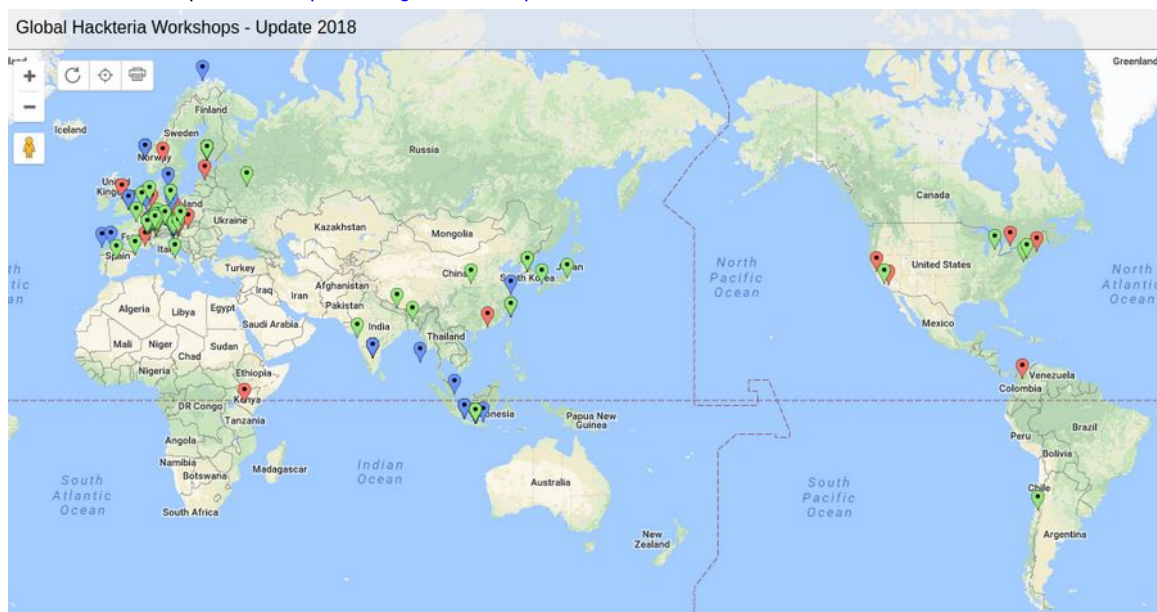
An even larger network has grown since our collaboration to initiate the first [Gathering of Open Science Hardware](#), held in 2016 in Geneva, which brought together researchers, makers, educators and open science enthusiasts to share experiences and collaborate on writing a manifesto and roadmap making Open Science Hardware ubiquitous by 2025. We have been part of the team for the different editions to follow in Santiago de Chile 2017 and coorganized GOSH 2018 in Shenzhen, China, together with partners from Public Lab, University of Cambridge, Our-Sci, CERN Citizen Cyberlab and openFIESTA, Tsinghua University.





## Appendix I: More than 150 Workshops... a global success story 2009 – 2019

See the interactive map online: <http://batchgeo.com/map/bd9c05d9de1d9e204123e78c284d40c4>



See a full list on our shared [spreadsheet online](#)

	A	B	C	D	E
1		<b>Hackteria Workshops</b>	<b>City</b>	<b>Country</b>	<b>Date</b>
2					
3		Humus sapiens Talk, 36C3, Chaos Communication Congress, Leipzig	Leipzig	Germany	2019-12-29
4		DIY Microscope Workshop – BAFU Kadertagung	Thun	Switzerland	2019-11-27
5		Talk - International Conference on Science & Technology ODA	Seoul	South Korea	2019-11-29
6		WHAT IS/NOT WORKING */ Sesi konversasi mengenai kerja bersama	Yogyakarta	Indonesia	2019-10-23
7		"Wormolution" Hackteria Temporary Autonomous Laboratory	Geneva	Switzerland	2019-09-12
8		BioElectronics and BioMaterials @ Institut Seni Indonesia	Yogyakarta	Indonesia	2019-08-07
9		Humus Sapiens - Biotopia	München	Germany	2019-05-26
10		BadLab-DIYordye	Bern	Switzerland	2019-05-24
11		Scoby, Shit and Humus, Mo Museum	Vilnius	Lithuania	2019-05-04
12		Super-natural imaging	Luzern	Switzerland	2019-04-05
13		Biopunk: Feed Food Fermentation	Zurich	Switzerland	2019-03-31
14		Humus Sapiens at Seed and Soil Conference Centre Culturel Swiss	Paris	France	2019-03-08
15		Make Your Own CRISPR-Babies	San Francisco	USA	2019-02-22
16		Humus Sapiens at Marie Curie Association Conference	Wien	Austria	2019-02-21
17		Scoby Shit and Humus, TopLab Berlin	Berlin	Germany	2019-01-18
18		The Odin Biohack 101 Class @ gasigaso kitchen	Zurich	Switzerland	2019-01-09
19		reSeq meeting - kickoff for wemakeit	Luzern	Switzerland	2019-01-08
20	2019				
21		"the first Open BioLab of Switzerland" setting up at Fablab HSLU	Luzern	Switzerland	2018-12-18
22		Chrisper-Chäslä Workshop @ Food Culture Days	Vevey	Switzerland	2018-11-17
23		Utopiana mini Residency	Geneva	Switzerland	2018-11-11
24		Off Ground Fly High - Playaround 10	Taipei	Taiwan	2018-10-21
25		Humus Sapiens - Zentrum für Umwelt und Kultur (Benediktbeuren)	Benediktbeuren	Germany	2018-10-16
26		GOSH Public day @ X-Factory, with Exhibition	Shenzhen	China	2018-10-12
27		GOSH 2018 - Shenzhen	Shenzhen	China	2018-10-10
28		HUMUS (sapiens) - TOP project space	Berlin	Germany	2018-10-07
29		Humus Sapiens on Tour - Wagenhalle	Stuttgart	Germany	2018-09-26
30		Humus Sapiens on Tour - PlastiTwist	Luzern	Switzerland	2018-09-23
31		Humus Sapiens on Tour - FieldNotes	Kilpisjärvi	Finland	2018-09-10
32		UGM Workshop, Open Science Hardware and DIY hacking	Yogyakarta	Indonesia	2018-08-10
33		Good Gofermert	Yogyakarta	Indonesia	2018-07-27





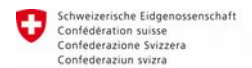
## Appendix II: Fundings received since 2009

The Hackteria project has been supported by: Bundesamt für Kultur (2009-2010), Migros Kulturprozent (2010 – 2015 & 2019), KulturRaum Schaffhausen (2011-2012 & 2019) Sir Ratan Tata Trust, Shristi, School for Art, Design and Technology and the National Center for Biological Science, India (2009-2013), Pro Helvetia (variously), SEED grant from EPFL (2013-2014), Swiss Contribution to the enlarged European Union (2012-2013), Arts Collaboratory, Hivos/DOEN (2014), Science Booster (2017 & 2018) via WeMakelt crowd-funding platform, collaborative projects with Hochschule Luzern (2017-2019), various individual project funds and a high degree of enthusiasm and volunteering by all its members.

### Swiss Funding



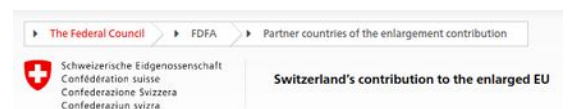
Kanton und Stadt Schaffhausen  
Kulturförderung



Eidgenössisches Departement des Innern EDI  
Bundesamt für Kultur BAK



### International Funding



### Crowdfunding

we make it


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### Humus sapiens

Open Soil: Research on the secret ingredients that make plants happy. Let's explore what is going on in the ground beneath our feet. Let's dig deeper together. Your contribution to a soil solution!

A crowdfunding project by [Julian Chollet](#) (mikrobiOMIK), [disjagt](#), and [Maya Minder](#), science, agriculture, and education, Zürich and Munich.

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**Project Status**

20'252 of EUR 9'000 pledged

62 backers

225 % percent reached

[f](#) 133 [in](#) 0 [t](#) 21 [v](#) 0 [e](#) 0 [c](#) 0

Soil Is Life

We're not talking about hummus. the Arabic chickpea dio -

This project ended successfully on 8/4/2018 22:00!



## Appendix III: Media and Press Selection

### Press Coverage Overview

See full press coverage on the [Hackteria website](#)

### **Bastler, Bakterien und Beerensaft**, *Sonntagszeitung* 1. Oktober 2017, Anke Fossgreen

[Download full article](#)



### Bastler, Bakterien und Beerensaft

Biohacker nutzen die Gentechnik, tüpfeln an Elektrogeräten oder fermentieren Lebensmittel. Sie sind untereinander vernetzt und teilen ihre Forschungsergebnisse miteinander

Wer als Hobby mit Bakterien oder DNA hantieren möchte, benötigt eine Grundausrüstung. Freizeitforscher bauen sich ihre Laborgeräte selber, bestellen ausrangierte Versionen über Ebay oder improvisieren. Beispielsweise kann ein Dampfkochtopf zum Sterilisieren verwendet werden oder ein umgebauter Reiskocher. Ein günstiges Mikroskop lässt sich aus einer Webcam basteln. Ein einfaches Experiment ist, die eigene DNA aus der Mundschleimhaut zu extrahieren. Man benötigt: Spucke, Spülmittel, Kontaktlinsenreiniger, Salz und hochprozentigen Rum. Wer hingegen Bakterien verändern möchte, braucht molekularbiologisches Zubehör, etwa Enzyme, die DNA zerschneiden oder eventuell eigens hergestellte Gensequenzen, die Firmen auf Bestellung zusammensetzen. Wichtig ist, dass Mensch, Tier und Umwelt nicht durch das Experiment gefährdet werden, eine Anforderung von Gentechnik- und Umweltschutzgesetz. Wer seine Versuche und das Heimlabor bei der Kontaktstelle Biotechnologie des Bundes anmeldet, kann legal loslegen. Tipps und Anleitungen liefern die Biohacker.

### **Die Entdeckung der Amateure**, *Neue Züricher Zeitung* NZZ, 4. December 2015, by Angelika Jacobs

[Download full article](#)

*Elfenbeinturm war gestern: Die Wissenschaft öffnet sich zunehmend der Bevölkerung und lädt Interessierte zum Mitforschen ein. Ein Statusverlust für Berufsforscher – oder eine Chance auf eine demokratischere Wissenschaft?*

Sünder Zeitung Forschung und Technik 04.12.15 / Nr. 252 / Seite 56 / Teil 01 © NZZ 2015

### Die Entdeckung der Amateure

Elfenbeinturm war gestern: Die Wissenschaft öffnet sich zunehmend der Bevölkerung und lädt Interessierte zum Mitforschen ein. Ein Statusverlust für Berufsforscher – oder eine Chance auf eine demokratischere Wissenschaft? VON ANGELIKA JACOBS

Auch Marc Dusseiller benutzt nicht gern den Begriff «Bürgerwissenschaft». «Auch jeder, der an einer Hochschule arbeitet, ist ein Bürger.» Lieber spricht er von «unabhängiger Forschung». Der ausgebildete Nanotechnologe lehrt zwar noch an Hochschulen, forscht aber nur noch – eben: unabhängig. Für das Netzwerk Hackteria reist er um die Welt und bietet Do-it-yourself Wissenschafts-Workshops an, in denen er mit den Teilnehmern Laborgeräte mit einfachsten Mitteln baut. Einer seiner Klassiker: ein Mikroskop aus einer Webcam basteln. Durch solche Tüfteleien wolle er die Wissenschaft und ihre Geräte entmystifizieren, sagt Dusseiller. «Es herrscht dieses generelle Denken, Wissenschaft sei etwas, das nicht jeder könne.» Dieses Denken sei auch in den letzten Jahrzehnten von den Hochschulen und Medien gefördert worden. In seinen Workshops möchte er es durchbrechen und Amateuren einen Einstieg in die Forschung ermöglichen.

**Die Frage bleibt, ob dabei eine Hochschule beteiligt sein muss. Dass auch abseits der Universitäten erfolgreiche Projekte entstehen können, zeigen der «Christmas Bird Count» und andere Unternehmungen. Eine wahrhaft demokratische Forschung muss sich letztlich wohl auch von den Hochschulen lösen.**

### **Die Forscherpiraten kommen ins Museum**, *Schaffhauser Nachrichten*, 11. June 2014, Saskia Baumgartner

Bei Hackteria vermischt sich Biologie mit Kunst. Am nächsten Wochenende geben beteiligte Forscher und Kreative im Museum zu Allerheiligen einen Einblick darin.

#### Interdisziplinärer Ansatz

Aber was wollen die Hackteria-Organisatoren nun erreichen – ein modernes Biologie-Projekt schaffen oder Kunst machen? «Wir wollen erst einmal, dass Menschen aufhören, in solchen Boxen zu denken», sagt Dusseiller. «Wir machen nicht nur Kunst, und wir machen nicht nur Wissenschaft, wir wollen Grenzen aufbrechen.» Interdisziplinarität ist das Stichwort.

#### Lokale Themen

Gerne werden zu den Veranstaltungen auch lokale Künstler und Wissenschaftler geladen, und man setzt sich mit den Themen vor Ort auseinander. Beim HackteriaLab in Indonesien etwa waren die dortige Wasserverschmutzung und der Vulkanismus Thema – in der Nähe Yogyakarta gibt es mehrere aktive Vulkane, erst im Februar hat wieder eine Aschewolke die Stadt überzogen. Zumindest der Randen wird bei der Hackteria-Veranstaltung in Schaffhausen auch Thema sein. Dieser soll bei einem Klangspaziergang – einer akustischen Entdeckungsreise – erkundet werden.

### Die Forscherpiraten kommen ins Museum





**Hackteria: An example of neomodern activism.** *Leonardo Electronic Almanac, Vol 20.1, 2014, Boris Magrini*  
<http://ojs.gold.ac.uk/index.php/lea/article/view/11>

As a platform for knowledge sharing and artistic exploration, Hackteria constitutes a network of artists and researchers that merge the use of biotechnologies with hacking and do-it-yourself strategies. Its process-oriented and performative approaches, opposing to the materialistic imperatives of the art market, lean to the tradition of political art. In the present paper, I am arguing that Hackteria embodies what could be considered a neomodern activism, other recent examples of which are emerging within the new media art field. Instead of rejecting new controversial technologies, they propose a vision of a society that is moved forward by a more democratic use and discussion of these technologies. The activities of Hackteria are examined through the presentation of a bio-lab created in Ljubljana.



The events organized by Hackteria are rooted in a long tradition of media art, as well as process-oriented and performative approaches. Performative art is not equivalent to process-oriented art; as Andreas Broeckmann correctly pointed out, "it only makes sense to speak of process-orientation in cases where the evolving process itself is a main factor of the aesthetic experience of the work." [4] Nonetheless, neither performative nor process-oriented art focus on the creation of a finite product, a distinctive trait of the activities run by Hackteria. Furthermore, the BioTehna project, for example, share both performative, interactive and process-oriented qualities, for it is not the lab as such that is meaningful to the artistic intent of the group but rather the process involved in building and running it.

**Innovation regimes based on collaborative and global tinkering: Synthetic biology and nanotechnology in the hackerspaces,** *Technology in Society, October 2013, Denisa Kera*  
<http://www.sciencedirect.com/science/article/pii/S0160791X13000638>

Typically nanotechnology and synthetic biology are discussed in terms of novel life forms and materials created in laboratories, or by novel convergences of technologies (ICTs and biological protocols) and science paradigms (engineering and biology) they initiated. Equally inspiring is their ability to generate novel institutions and global communities around emergent sciences, which radicalize the forms of public engagement and ethical deliberation. We are starting to witness alternative (iGEM competitions) and almost underground R&D engagements with Synthetic Biology (DIYbio movement), which inspired the emerging bottom-up involvements in nanotechnologies in projects, such as the NanoSmanoLab in Slovenia. These bottom-up involvements use tinkering and design as models for both research and public engagement. They democratize science and initiate a type of grassroots "science diplomacy", supporting research in developing countries. We will discuss several recent examples, which demonstrate these novel networks ("Gene gun" project by Rüdiger Trojok from the Copenhagen based hackerspace, Labitat.dk, the "Bioluminescence Project" by Patrik D'haeseleer from Biocurious biotech hackerspace in Sunnyvale, CA, and the "Biodesign for the real world" project by members of the Hackteria.org). They all use design prototypes to enable collaborative and global tinkering, in which science and community are brought together in open biology laboratories and DIYbio hackerspaces, such as Hackteria.org or Biocurious. In these projects research protocols encompass broader innovative, social and ethical norms. Hackerspaces represent a unique opportunity for a more inclusive, experimental, and participatory policy that supports both public and global involvements in emergent scientific fields.



**The Art of Open and Free Science, MCD #68, 2012, Ed. A. Delfanti, Interview S. Tocchetti**  
<https://www.hackteria.org/media/interview-in-mcd68/>

**Could you explain what is Open Source Biological Art and how it relates to DIY biology?**

Whether it is a wiki or a workshop or both doesn't really matter, what is essential is to enable people to collaborate and share knowledge and instructions. Open Source Biological Art enables people to perform complex scientific protocols without the support of an official institution. We believe that it is important to enable more people to feel confident in working with living systems in order for creative and new ideas to emerge. When applied to science and art, it can create a new type of public participation and understanding of both domains.

**What is your view on the future of citizen science?**

My hope is that if more people are making things with their hands and have this direct and everyday experience with scientific protocols, we can demystify science and open the whole decision making process to more people and opinions. I think this is the future society, where I want to live, a place where tinkerers and lay people find new and unexpected uses and functions of technologies and scientific knowledge, where they hack it and adapt it to their dreams and lives and don't wait for some big corporation or government to decide what is good or safe for them.

