

INTERVIEW WITH MARC DUSSEILLER

HACKTERIA

■ **Could you tell me something about the history of Hackteria and how it is changing over the years?**

The three of us met in Madrid during a large workshop organized by the Medialab Prado called "Interactivos?09: Garage Science", on how the open source and citizen science approach can change society. During the workshop we decided that we need a type of organization and activities that will bridge the gap between the popular bioart practices and the emergent DIYbio/citizen science approach, and Yasha came up with this funny name Hackteria. We organized our first Hackteria workshop in Berlin on how to use DIY microscopy for sound interfaces. In 2010 HackteriaLab started a series of expert gatherings during which we evaluate what was done and establish new collaborations. Right now we have Urs Gau-

denz in Lucerne working closely with SGMK on new workshops on laboratory infrastructure, then Brian Degger, who co-founded a Hackerspace in Newcastle, doing a lot of playful bio-experiments, then a DIYbio geek from Germany, Rudiger Trojok, who will move to Copenhagen soon to start organizing workshops in the local Hackerspace, BiologiGara-gen, and Denisa Kera, who is starting some collaboration between Prague based Hackerspace, Brmlab, and the Hackerspace in Singapore.

Why is this focus on the world outside of the laboratories important for Hackteria?

Rather than having just one citizen science laboratory like a typical Hackerspace, we developed a strategy of mobile labs, which can be installed and transported anywhere in the world: art studios, art centres, or even

unexpected places like jungles or streets of Indonesia, where we have already performed and further developed some science experiments. The mobile labs help us understand how these future technologies will interact and influence our everyday life and practice in very different contexts. Most Hackteria work is very process-oriented and open-ended, we like to improvise in new locations and with new people, which often results in unexpected, creative projects. Doing "science" and experimenting with technologies in the DIY manner on the streets, in the art centres or various other locations helps us understand what are the challenges and limits and how to create tools and processes that will simply enable more people to enjoy research and tinker around with "expert" knowledge.

Could you describe some recent Hackteria project, which embodies this type of vision and practice?

On our wiki you have over a dozen of people contributing and describing their ongoing projects, so right now there are over 45 projects starting with simple instructions on how to build a laboratory infrastructure to more sophisticated descriptions of lab protocols on how to work with different living systems. You can learn some basic DIY techniques of growing bacteria and algae or start your own microscopy project with a simple set of instructions on how to turn a cheap webcam or a Playstation3 Eye camera into a DIY microscope. The microscopy project is very popular but also useful not only for science amateurs and artists but also for people from the developing countries with limited access to expensive lab equipment. The microscopy project is also a good example of how we work, we like to hack consumer electronics and hardware to serve a new purpose. We transform these symbols of our enslavement to the media industry into emancipatory lab equipment, which can enable anyone to explore and observe nature, specifically the world of the microorganisms.

And how have you seen other themes and practices evolving during these years?

We are starting more projects in bioelectronix, but we will also continue our work with DIY

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Smela.

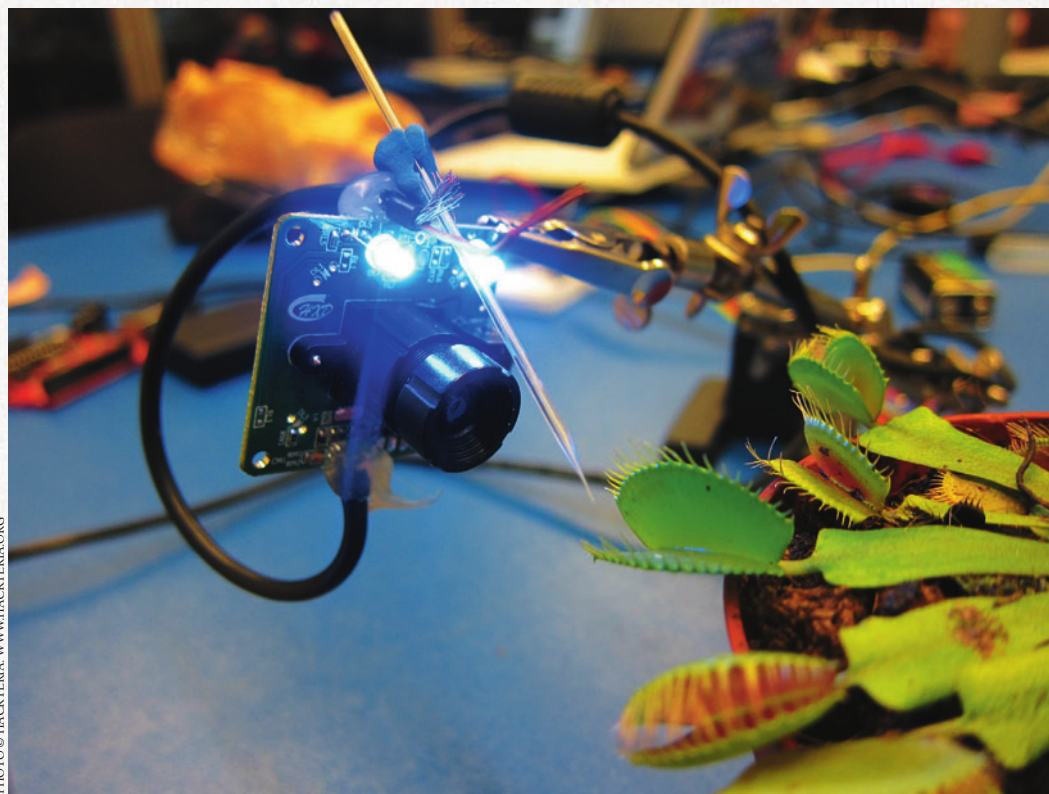


PHOTO © HACKTERIA, WWW.HACKTERIA.ORG

microscopy and synthetic biology. We would like to start experimenting with biofuels for which we are building a bioreactor to grow algae using an Arduino. Many of our members are still very keen on fermenting wines and even various gardening projects. The microscopy project will likely evolve into attempts to create a bioprinter to print fungi or bacteria. The laboratory tools, such as incubators, pipettes, centrifuges and others are still the core of our activities, because I think it is essential to be able to set up a laboratory wherever you are. During the last year I have been building simple kits for 'lab-in-a-box', a mobile biohacker suitcase. This January in Indonesia we even transformed a local street food truck into a semi-functional biolab, with which we performed simple scientific experiments with microscopes, sterilization, but also molecular gastronomy experiments like spherification.

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. Artists nowadays rarely share their precise instructions on how they did something. They simply think the documentation of their process is not important, and that the role of the public is to be just viewers, passive consumers and admirers of their works. In this respect, so-called bioartists are a little bit like scientists creating their own ivory towers. We think this is very old fashioned and actually wrong because it creates the wrong impression that both science and art are something practiced by certain experts and elites that will decide on our future. Our approach is radical, we believe that everyone should be actively involved in the future of biology and science, and that amateurs, tinkerers and hackers should have an equal access to the tools of art and science "production".

Why is it important to bridge the gap between artists and scientists and how it relates to the discussions on the relation between experts and lay people?

I am very interested in improving science communication and public participation in

the life science. I would like to see a type of democratization of science, which involves citizens directly rather than leaving the whole discussion to some NGO, media or professional science communicators who will represent and mediate their voices. My hope is that by enabling more people to do science in their garages, kitchens and bathrooms, and by enabling more artist, designers and simply enthusiasts to work on various scientific projects, we will create a scientifically literate public, which can democratize decisions on stem cells, embryos, GMOs, nanotechnologies etc.

And what is your relation to the DIYbio scene? On what type of projects do you collaborate and how do you differ from them?

Hackteria was part of the global DIYbio movement right from the beginning and our activities were always overlapping. Two years ago when DIYbio.org was still starting I met Mac Cowell, the founder of the movement, and invited him to one of our summer camp, and we collaborate and help each other quite often. The difference is maybe that the DIYbio.org is more like a mailing list with many functions, while we are primarily a wiki with instructions on how to build things, and also we organize a lot of workshops and events, which are not that essential for the core DIYbio movement. Another difference is that they are much more science and business oriented while we engage much more with artists, designers and even philosophers. Hackteria's educational and wiki resources are essential in helping artists and designers to gain confidence so they can later go on any science related mailing list, pose more specialized questions and communicate with

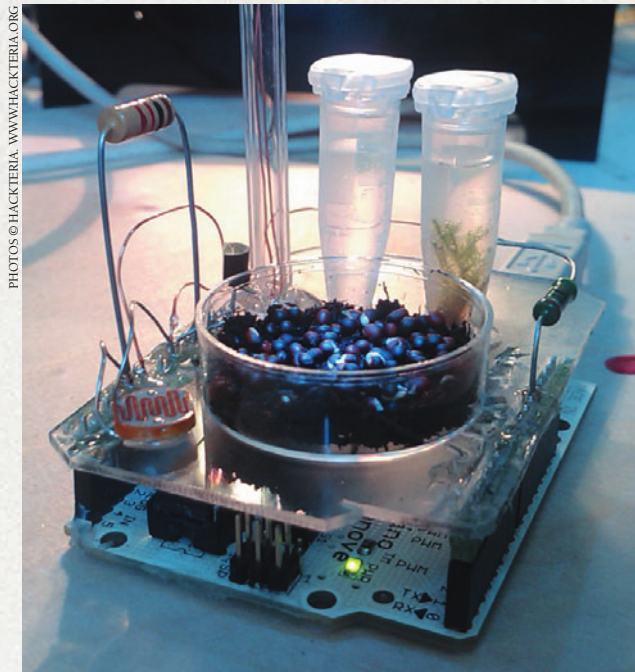
the scientists. The relation between Hackteria and DIYbio creates this nice synergy and opportunity to support unique collaborations.

Could you explain how you imagine the ideal relation between professional scientists and citizen scientists?

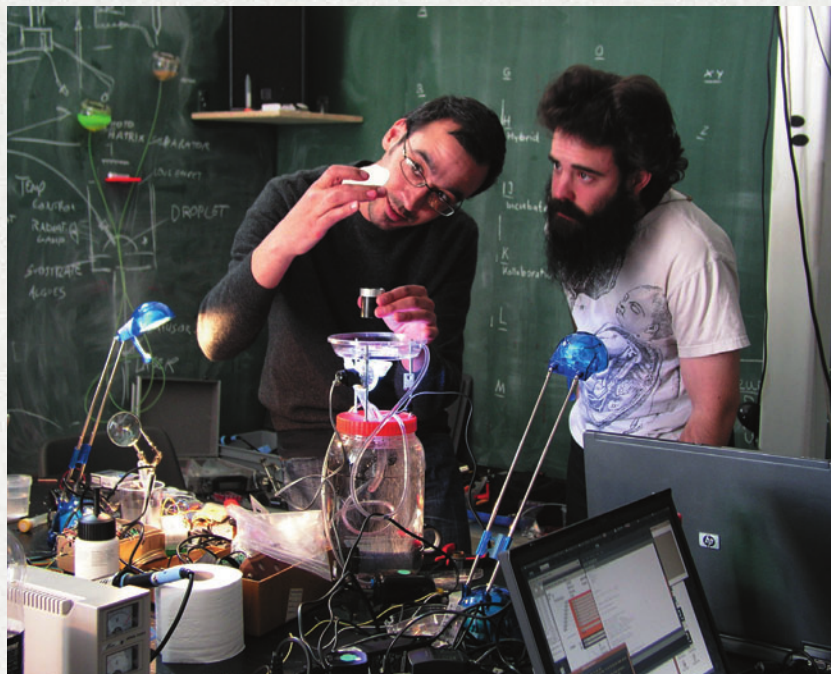
When I visited Yashas in India for the first time, I realized how important is the DIYbio work we were doing in developing countries. There, science equipment is too expensive and scientific publications basically inaccessible. The Hackteria wiki enables students in these countries to gain research skills with some of the DIY tools we have developed, and we are constantly developing new tools. Many of our members are actually professional scientists, who took the DIYbio challenge seriously. They enjoy developing instructions and tools for people who for various reasons can't afford or don't have access to a professional lab space. DIYbio tools may never produce a cutting edge research but they play an essential role in the education of scientists and basically anyone who is trying to understand what is happening in professional science labs. DIYbio protocols and tools are means of science emancipation, a type of individual freedom and even right to develop your own, personal relation to scientific knowledge and to try new things, so you can make an informed opinion about such issues. Hacking stuff and making cheap tools to start your own laboratory and infrastructure will democratize science in this sense. It creates an opportunity for developing countries to improve their science education and research, which is meaningful to themselves and not to some peer review, Western journal, which is anyway inaccessible.

Ars Daphnia
Circus.





Hresse Shield.



Working in Lab.

Who are the people who participate in your workshops?

It depends on the venue and the location. If it is a media art festival, the majority of the participants will be "technology and science oriented" artists and some engineers working on an art project but mostly those who don't have much experience with biology so they are reaching out and trying to learn something different in a friendly environment. Sometimes we also work with children. In India or in Indonesia we were also successful in attracting the local villagers and communities, and there we often work with some local organizations that have similar goals. In Indonesia there are organizations such as HONF (House of Natural Fiber) and

Lifepatch.org that often involve local farmers and use some of the Hackteria methodologies, our DIY webcam hacked microscope, or protocols for making wine and fertilizers. Also Yashas is working with local villagers in India, teaching genetic manipulation and synthetic biology by using comics books, which speak to the general public.

Tell us something about your personal projects under Hackteria

For the last two years I have been doing a lot of work in Slovenia on nanotechnology and biology with Kapelica Gallery, a prominent institution at the interface of art and science. We started with the NanoSmano project in 2010, which was a participatory public lab for experiments with nanotechnologies and their aesthetic potential. For two weeks a small group of science experts and artists were working on developing nanotech prototypes while the lab was open to the general public. With Kapelica we are also planning a series of workshops with children and we are setting up a mobile lab. I'm also active in Indonesia, where I have been organizing workshops for the last three years on DIY microscopy, fermentation, science outreach for local schools but also science and VJing events with the booming art scene. Meanwhile they started a new project called Lifepatch.org, a citizen initiative in art, science and technology with a wiki very similar to ours but in Bahasa, so we are cooperating on many projects. It is very gratifying to see how the network is spreading, mutating and interacting around the globe.

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. Because I'm also working as an educator, I have the opportunity to see how the attitude to science changes with direct experience. I think scientific institutions should spend more money teaching people how to do science and open their labs to the public rather than pay specialized science communicators to do some PR campaigns, which only create more suspicions. ■

interview by Sara Tocchetti

Cyber Oechslemeter.



Hackteria is a network of people practicing DIY (do-it-yourself) biology with an interest in art, design and interdisciplinary cooperation. The network was founded in 2009 by Yashas Shetty, Andy Gracie and Marc Dusseiller and now includes not only scientists, engineers and artists, as you would expect, but also philosophers, entrepreneurs, and even foodies and chefs. Hackteria operates on a global scale, and is based on a web platform and a wiki for sharing knowledge, which enable anyone to learn but also test different ways of hacking living systems. Hackteria is not based in a physical space, and its goal is to allow artists, scientists and hackers to collaborate and test various biohacking and bioart techniques outside the official laboratories and art institutions, basically anywhere in the world. Web: www.hackteria.org