# About dusjagr labs

# Short Biography

**dusjagr labs**
ideas research movies instruments

**Dr. Marc Dusseiller**
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**Dr. Marc R. Dusseiller** Citizen of Switzerland, born on 4.11.1975

**Marc R. Dusseiller** is a transdisciplinary scholar, lecturer for micro- and nanotechnology, cultural facilitator and artist. He works in an integral way to combine science, art and education. He performs DIY-workshops in lo-fi electronics, music and robotics, has made various short movies and is currently developing means to perform biological science (co-founder of Hackteria | Open Source Biological Art) in a DIY fashion in your kitchen or your atelier. He is also co-organizing Dock18, Room for Mediacultures, and various other engagments like the diy* festival, national and international workshops for both artists, schools and children as the president of the Swiss Mechatronic Art Society, SGMK.

**Short Biography**

‘08 - now Lecturer for Micro- and Nanosystems for Life Sciences at FHNW, University of Applied Sciences Northwestern Switzerland, School for Life Sciences, Switzerland

‘08 - now Lecturer for traditional materials in sculpting and fine arts at ETH Zürich, Switzerland

‘07 - now Organization of various workshops for the Swiss Mechatronic Art Society (SGMK), hackteria and Dock18

‘06 Doctor of Sciences, ETH Zürich, Switzerland

‘01 Diploma in Material Science and Engineering, ETH Zürich, Switzerland

**Awards**

'09 Award „Werkbeitrag der Migros Kulturprozent for “Hackteria, Open Source Biological Art“

‘09 Award for “Hackteria, Open Source Biological Art“ by Bundesamt für Kultur, Projekt Sitemapping

‘08 Award for the best poster presentation at NanoTech 2008

‘08 2nd Prize for “Hase Znacht” at agent-provocteur’s contest in january 2008, a 30 sec stop-motion movie

‘07 1st Prize for “Duell” a 10 sec pixelanimation @ www.5-10-20.ch Shortest Silent Movie Competition

‘05 Travel Award from the American Society of Cell Biology at the 2005 ASCB Summer Meeting, Seattle, USA

‘03 “Lab on a Chip Award” for best poster presentation at NanoTech 2003

**Selected Work**

'10 Research based Exhibition with Stefan Doepner: „NanoŠmano“, Kapelica Gallery, Ljubljana, Slovenia

'10 Hackteria BioElectronix workshop and SGMK diy makeaway at ISEA2010, Dortmund, Germany

'10 Workshop for Teachers DIY Microscopes, Technorama, Winterthur, CH

'10 Workshop SlowGames, in collaboration with René Bauer, Bachelor in Game Design, ZHdK, CH

'10 Organisation of the first Hackteria Lab, Dock18, Zürich, CH

‘09 & ’10 Playaround Workshop in collaboration with dimension+ and NTUA, Taipei, Taiwan

‘09 & ’10 DIY and Bio-Art Workshops during cellsbutton#03, Gadjah Mada University, Yogyakarta, Indonesia

‘09 Bio-Art Workshops at CEMA, Srishti School for Art, Design and Technology, Bangalore, India.

‘09 Co-organization and workshops for the poolloop Festival, Zurich, CH

'09 Foundation of Hackteria | Open Source Biological Art and Bio-Art workshops Piksel09, videotage ao.

‘09 Collaboration on the installation Garage Astrobiology @ Interactivos?09 , Medialab Prado, Madrid, Spain

‘08 Workshop at playaround (Taiwan) organized by microplayground, collaboration with NCTU and ITRI , TW

‘08 Cooperation on the interactive media sculpture “The Electric Retina” with Prof. Jill Scott, ZhdK, Zurich, CH

‘07 & '08 Coordinator of diy* festival, Zurich, CH

**Further documents online**

| | |
|---|---|
| Complete Curriculum Vitae | http://www.dusseiller.ch/cv/CV_dusseiller_main_2007.pdf |
| List of Publications | http://www.dusseiller.ch/cv/CV_appendix_a_scientific.pdf |
| Cultural portfolio and press (german) | http://www.dusseiller.ch/cv/CV_appendix_d_kultur.pdf |

**online press links**

| | |
|---|---|
| dusjagr labs (personal website) | http://www.dusseiller.ch/labs/?page_id=92 |

# About dusjagr labs - Fields of Activity

dusjagr labs – transdisciplinary Scholar and Artist

http://www.dusseiller.ch/labs/

- SGMK | MechArtLab, diy* festival
  - http://www.mechatronicart.ch/
- Hackteria | Open Source Biological Art
  - http://hackteria.org
- PlayAround 2010 - Taipei | DIWO Culture
  - http://2010.playaround.cc
- Dock18 | Raum für Medienkultur
  - http://www.dock18.ch/
- FHNW, HLS | wetPONG - Hybrid Games, Micro- and Nanotechnology and Life Sciences
  - http://wetpong.net
- ZHdK | SlowGames
- ETH Zürich | Traditional Materials

# About dusjagr labs - Press


http://www.dusseiller.ch/labs/?page_id=92

How can I teach creativity? Is there an intuitive understanding of Nanosystems? What's the benefit of transdisciplinary projects? How can scientists learn to talk?

# Workshops and Labs as a Performance?

# HACKTERIA.ORG

*Open Source Biological Art, DIY Biology, Generic Lab Equipment*

Hackteria is a community based platform and information portal for the open sharing of knowledge, instructions, critical reflections and theoretical articles about open source art project dealing with biology | lifescience | biotechnology

http://hackteria.org

Hackteria is a 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. The aim of the project is to develop a rich web resource for people interested in or developing projects that involve DIY bioart, open source software and electronic experimentation. As a community platform hackteria tries to encourage the collaboration of scientists, hackers and artists to combine their experitise, write critical and theoretical reflections, share simple instructions to work with lifescience technologies and cooperate on the organization of workshops, festival and meetings. The hackteria project is supported by: Bundesamt für Kultur, Migros Kulturprozent, Sir Ratan Tata Trust and Shristi.

To summarise, Hackteria is:

* An open source 'make' resource for protocols, processes, tools, techniques and information for 'bio'-art and 'bio'-artists
* A group of artists and scientists who organise and hold workshops, presentations and discussion forums based on these resources
* A platform for the development and dissemination of knowledge related to DIY and open source hardware, software and wetware techniques for artists and researchers.



***What is a hack?***

*Originally:*
„A quick job that produces what is needed, but not well.“

*1950s:*
Amateur radio enthusiasts defined the term hacking as creatively tinkering to improve performance.

*Today:*
"A clever solution to a problem."

„An appropriate application of ingenuity.“

*Hacker's Jargon*

For a short introduction the following movie gives a nice overview of the hackteria project:
http://vimeo.com/18052500

# Workshop: DIY Microscopy

**DIY Microscopy**

Workshop by Marc Dusseiller, 2009 – 2011
Collaboration with House of Natural Fiber (HONF), Indonesia
Technical Assistance: Urs Gaudenz, Alejo Duque and various participants

Through a simple hack, every webcam can be turned into a useful digital microscope, allowing the magnified observation of life forms, analysis of biological motion and form, as well as audio-visual interpretations for aesthetic presentation.

Perhaps the key activity and aim of the hackteria project sofar is to provide accessible and affordable tools and information to allow artists, hardware hackers and amateur scientists to work with micro-organisms in a meaningful way. Over the past 2 years we feel we have achieved this goal on numerous occasions. Following hackteria workshop methodologies it is possible, for example, to produce a good quality video microscope for the fraction of the cost of a shop bought device.

Finally, some of the hackteria projects have been further implemented in other aspects outside of the arts world. For example the DIY microscopy project has been tought in the Swiss Science Center (Technorama), as higher education for teachers to be implemented in secondary schools for Biology/Technology education. In addition it has been implemented in Universities and High-schools in Indonesia, where, in the context of a developing country, it can be used as an educational tool and also has the potential for low-cost diagnostics of blood-based diseases, such as Malaria or Tuberculosis.

http://hackteria.org/?p=52

Watch an exemple video online:
http://www.youtube.com/watch?v=-BgTDjYrIV8

# Workshop: Bioelectronix for Artists

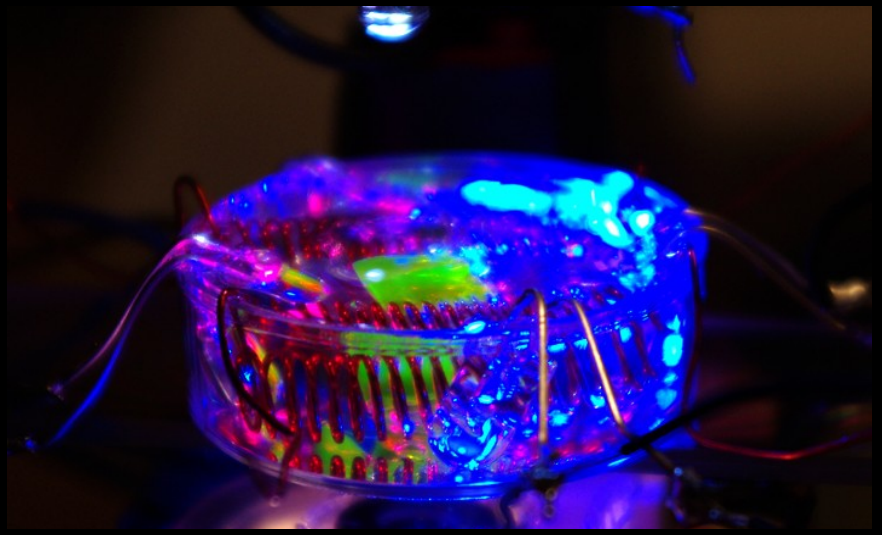
**BioElectronix for Artists**

Workshop by Marc Dusseiller and Andy Gracie, 2009 - 2011

'Biolectronix for Artists' is built around the central Hackteria idea of bringing scientific apparatus and protocol into the sphere of art, electronics hacking and open source environments. The workshop is an experimental make-workshop with multilayered outcome for people interested in sound, DIY-biology, microscopy and simple technological interaction of living microorganisms. Participants will become involved in sourcing and isolating microorganisms such as tardigrades, nematodes, daphnia and rotifers and then develop open hardware and software environments with which these organisms can be both viewed and become the subjects for simple interactions. The activities of the workshop will take place in 'close-up' – therefore a central focus of the activities will be the hacking of USB webcams to build DIY video microscopes. Using materials such as PDMS silicone, commonly used in biotechnology and microfluidic practice, the participants will then design and construct their own bespoke device within which experiments in bioelectronic interaction can take place.

The hackteria project now has 3 standard workshops and associated projects which it has succesfully delivered and shared around the world. The first two years of the project has proven to be effective, important and viable, having grown from a simple idea to a network of international collaborators and having received invitations from presitgious international institutions to present workshops – (eg. ISEA, piksel, Pixelache, CEMA, HONF). The important next step for the hackteria project is to consolidate and develop new workshops, protocols and ideas. The diverse range of geographical locations of hackteria members and associates can prove difficult in this repsect, hence the importance of face to face meetings and brainstorming sessions.

http://hackteria.org/?p=335



Watch an exemple video online:
http://www.youtube.com/watch?v=-BgTDjYrIV8

# Workshop: Getting on Plant's Nerves

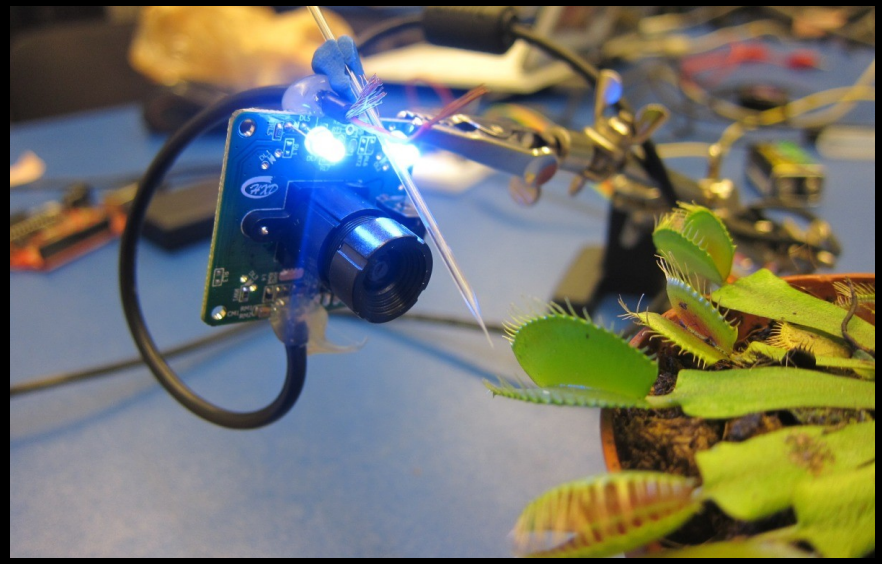
**Getting on Plant's Nerves**

Workshop by Marc Dusseiller, Spela Petric and Andrej Meglic, 2010

As a collaboration of Dr. Marc Dusseiller, Nanoscientist/Artist, Dr. Špela Petrič, Biochemist/Artist and Dr. Andrej Meglič, Electrophysiologist, we have combined our expertises in this research based workshop to develop new application of our DIY tools, such as the hacked webcam microscope in combination with self-made pipette electrodes.

During the workshop at HAIP festival we have developed a new project to be used as an introductory workshop into BioArt and hybrid systems. The use of plants as an introduction has turned out to be very successful, because it lacks the hurdle of a fear of contact and everybody is very comfortable when working with „gardening“. Anyhow, many basic concepts of biology or electronic measuremnets can be introduced. We have developed a simple instruction on how to build DIY glass-electrode micropipettes, which can be used to detect/measure electrical potential in plants. The combination of the microscopy project and the DIY electrodes lead to the Plant S.M.E.L.A (Single Microscope Electrode Lighting Amplifier Unit), which allows to record the signal transduction inside the stem of a plant, when changes in the environemt occur, and at the same time have a close-up visual observation of the biological sensors on the leafs of the plant.

http://hackteria.org/?p=443




Watch an exemple video online:
http://vimeo.com/17214855

# Hackteria Lab @ Dock18, Zürich

**HackteriaLab 2010 - Dock18**

Research- and Process-based collaborative public Lab organized by Marc Dusseiller in collaboration with Mario Purkathofer, Dock18

Next to the workshops aiming at a beginners level introduction into the field of bioart, we have also organized the first issue of the HackteriaLab in April 2010, Dock18 in Zürich. The goal of this lab was to invite new collaborators from different backgrounds into the hackteria network, to develop new projects to be used in future workshops and to share and reflect our personal experiences with a public audience.

4 days, follow up workshop

http://hackteria.org/?p=443

**DOCK18**
**RAUM FÜR MEDIENKULTUREN**


## Hackteria Lab

6. - 9. April 2010 - day programm
Intensive constructivist and collaborative workshop on BioHacking, DIY Microscopy, Microorganisms, Nano-Bio-Technology, BioElectronix and more...

9. April 2010 - evening
HACKTERIA SHOW
LIVE http://tv.dock18.ch

10 & 11 April 2010 - day programm
Public workshop for artists, geeks and families: How to build your own microscope from a webcam.

# Lab: NanoŠmano

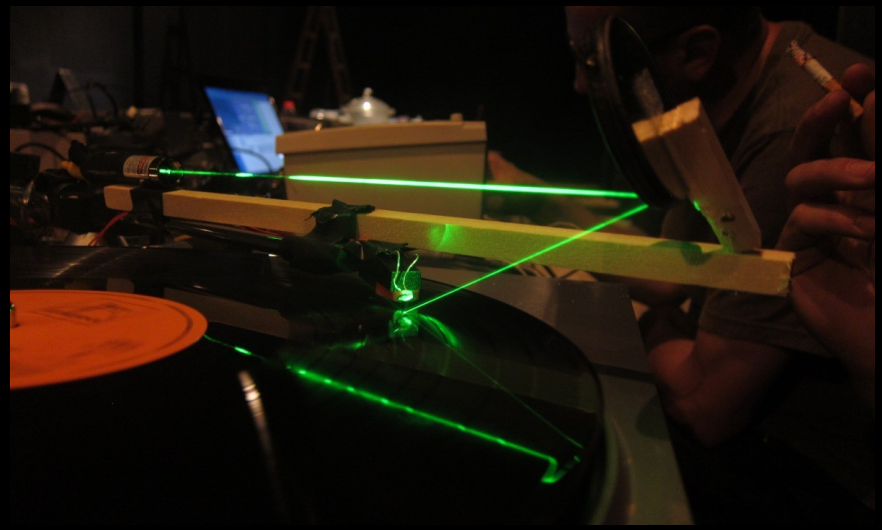
**NanoŠmano, NanoPunk and the Hacking of Future**

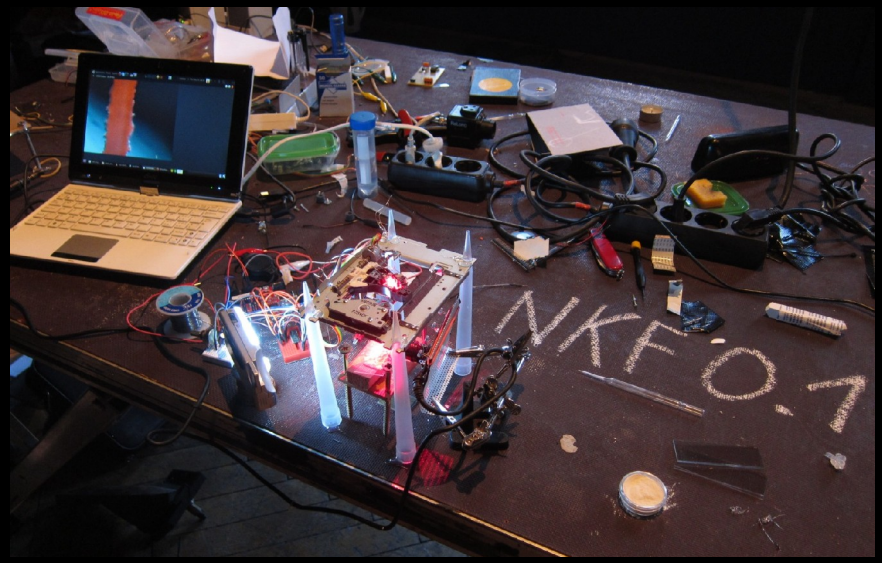
Stefan Doepner, Marc Dusseiller and Bostjan Leškovsek
Kapelica Gallery, Ljubljana, SLO | 20.9 – 1.10.2010

To broaden our Hackteria activities, we have also developed new ideas to include topics from the Nanosciences into the hackteria project. While currently in the natural sciences a convergence of different disciplines is taking place at the lenght of a few nanometers, in my oppinion, the current artistic interpretations of the field still lacks some fundamental understanding of whats really going on and relies on utopic fantasies or the publicity of horror scenarios. Invited by Kapelica Gallery, Ljubljana (SLO), a group of a sculptor, a sound artist and a scientist, together with friends and visitors, came together to work for 10 days on the issues of Nanotechnology. As an outcome we have developed prototype installations and simple instructions to be used for future workshops and public exhibitions. We transformed old DVD-burners into tools to manipulate and sense matter on the nanoscale, we hacked webcams into powerful microscopes for observation and constructed systems to play with and have audio/visual experiences. Additionally, another NanoŠmano will take place in Spring 2011, to go further into that direction.

By the end, we had constructed several artefacts, such as the NanoŠmano Glista Dance (NŠ GL 1.0), the NanoKunstFabrik (NKF 0.1 & 0.2), the NanoŠmano Television (NŠ TV 1.0), the pd_NanoŠmano Explorer (NŠ_ex 0.2), the NanoŠmano Turntable (NŠ AFM 1.0) and the NanoŠmano Dancing Particles (NŠ DP 1.0).

http://hackteria.org/?p=380






Watch an exemple video online:
http://vimeo.com/15258262

SMAS Swiss Mechatronic Art Society
SSAM Société Suisse d'Art Méchatronique
SGMK Schweizerische Gesellschaft für Mechatronische Kunst
www.mechatronicart.ch

**Schweizerische Gesellschaft für Mechatronische Kunst, SGMK**

*Founders*
Marc Dusseiller, Markus Haselbach, Christoph Stähli, Robert Korizek

http://www.mechatronicart.ch

The Swiss Mechatronic Art Society (SGMK, established in 2006) is a collective of engineers, hackers, scientists and artists that joined to collaborate and promote on creative and critical uses of technology. They develop DIY technologies and organize collaborative events, such as a yearly research-camp in the mountains and local regular workshops in electronics, robotics, physical computing, diy-biology, lofi-music etc. They run a public hacker space „MechArt Lab" (since 2009) and organize the international diy* festival, held every year in Zürich since 2005. They also cooperate with various socio-cultural organisations to hold creative technology courses at schools and youth communities. With the „diy makeaway", a series of mini-workshops for kids and other open-minded people, they have been present internationally at various exhibitions and festivals, such as SHIFT Festival in Basel, at Copy!, Poolloop and Dorkbot in Zürich, MediaLab Prado in Madrid, CTM.09 in Berlin, CEMA in Bangalore, Cellsbutton#03 in Yogyakarta and many more.
SGMK has been supported by: Bundesamt für Kultur, Migros Kulturprozent, Stadt Zürich and various private sponsors.

Ideas, Research, Movies, Instruments

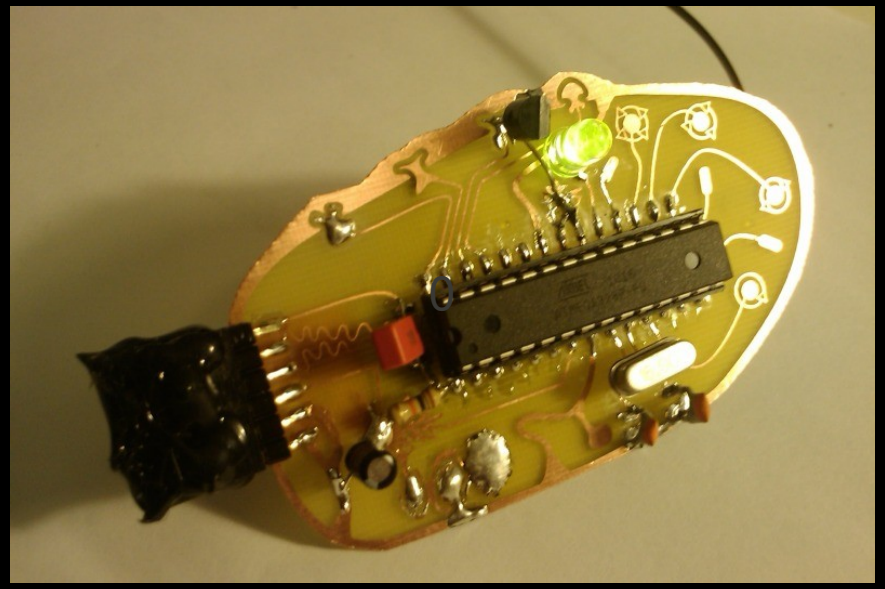
# Electronic Circuits

**Hackteria's BioElectronix Arduino-Clone**
Bio-inspired microcontroller circuit, 2010

Concept and Realization: Marc Dusseiller

For the use in various workshops the arduino platform has been proven to be very useful to introduce the participants into simple programming and physical computing. Both as a souvenir and inspiration, I have developed an arduino-clone, which can be soldered by hand in the course of 30 minutes and be kept and used by the participants. The circuitboard shows an intersting combination of aesthetics from electronics and living systems, exhibiting the shape of a single cell organism, including shapes of subcellular structures, which are used as electronic input/output pads, and generally inspires people to think transdisciplinary that electronics and living systems can be friends.

http://hackteria.org/?p=477

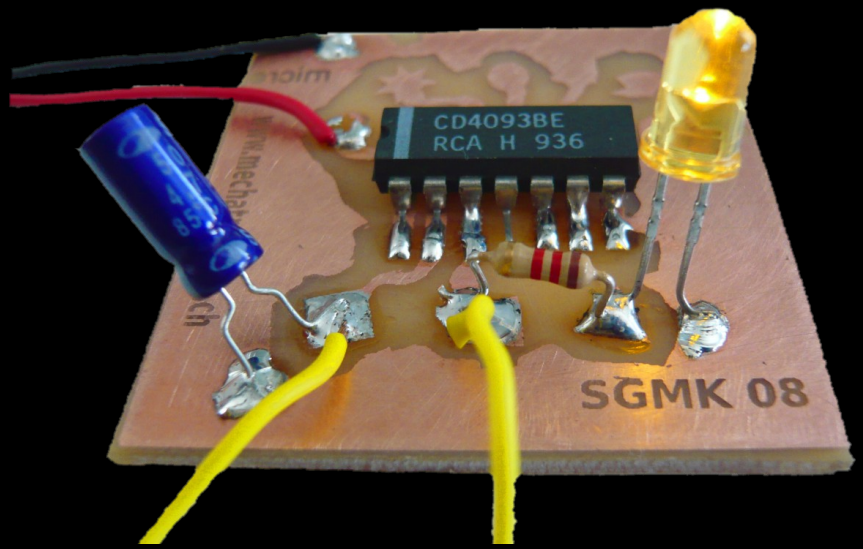


**diy makeaway's micro_noise**
Simple electronic synthesizer circuit, intuitiv design, 2008

Concept and Realization: Marc Dusseiller

For the use with beginners, festival/exhibition visitors or children. With the „diy makeaway“ we have already been present at various events ranging from art festivals, club nights and bars, galleries or kids summer-camps. The idea of „diy makeaway“ is to introduce the general public into the act of creation in electronic art by these extremely simple mini-workshops. Our „classic“ micro-noise workshop (a simple synthesizer noise-toy), has been built by almost one thousand participants worldwide by now

http://www.mechatronicart.ch/diymakeaway/?page_id=11



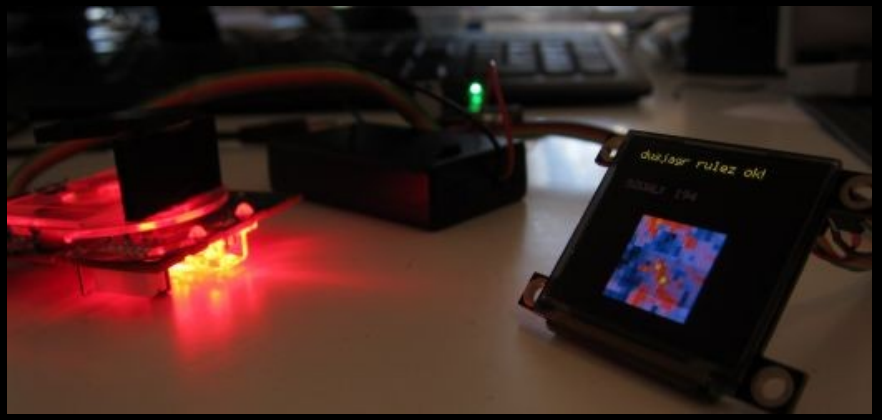
# Hacks

**Hacked Optical Mouse**
Lo-Fi standalone visualization of microscopic images, 2010 - 2011

Concept and Realization: Marc Dusseiller
Technical Assistance: Urs Gaudenz & Bengt Sjölén

The sensor of a standard optical mouse is a high-end embedded image processor (eg. ADNS2051, 2$), analyzing the optical flow of an image recorded by a 16x16 CMOS sensor. It is optimized for high-speed and reliability, is mass produced and available abundantly worldwide. Hacking into the chip directly allows to get more information about the detected image, such as surface quality (SQUAL), intensity and shutter speed. Serial communication to the sensor-chip is straight forward and can be done using an open-hardware microcontroller platform, such as the Arduino, which can also be used to display the information on a OLED display.

http://hackteria.org/?p=737

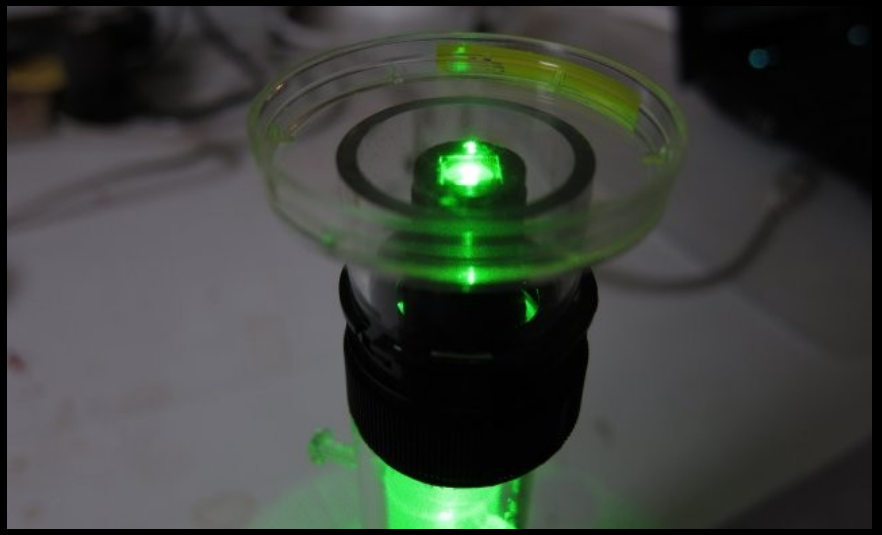



**Laser Microscope Projector**
Simple hack for laserprojections of the microcosmos, 2010 - 2011

Concept and Realization: Marc Dusseiller

Here i want to describe a hack how to modify a (quite strong) green laser pointer with an old lens from a webcam into a microscope projector, which magnifies tiny living microorganisms from a natural pond or a piece of fresh moss onto your wall. Nowadays strong green laser pointers can be bought everywhere, eg. at the chinese store around the corner or ordered on ebay. The stronger the better, try to go for one above 30mW, the example below uses a 100mW, which even allows the projection at daylight. Also look around for an old or cheap webcam with a big lens that can easily be screwed out.

http://hackteria.org/?p=630



# Visuals/Installations

**Worm is a VJ**
Hybrid electronic-living system, projection, 2010

Concept and Realization: Marc Dusseiller
Technical Assistance: Budi Prakosa (HONF) & Urs Gaudenz

This visual installation uses a hacked optical mouse to detect and visualize living nematodes at 18x18 pixel image resolution, which is then projected inside a miniature labbox. It has been used in installations, as VJ tool and performances (eg. Marathon der Tiere, Zürich). The combination of the hacker's approach, the lo-fi pixel aesthetics and the use of living organisms gives rise to a real-time public experience of biotechnology, raising questions of how we exploit the environment, how we treat living organisms and where the future of hybrid technology might lead us.

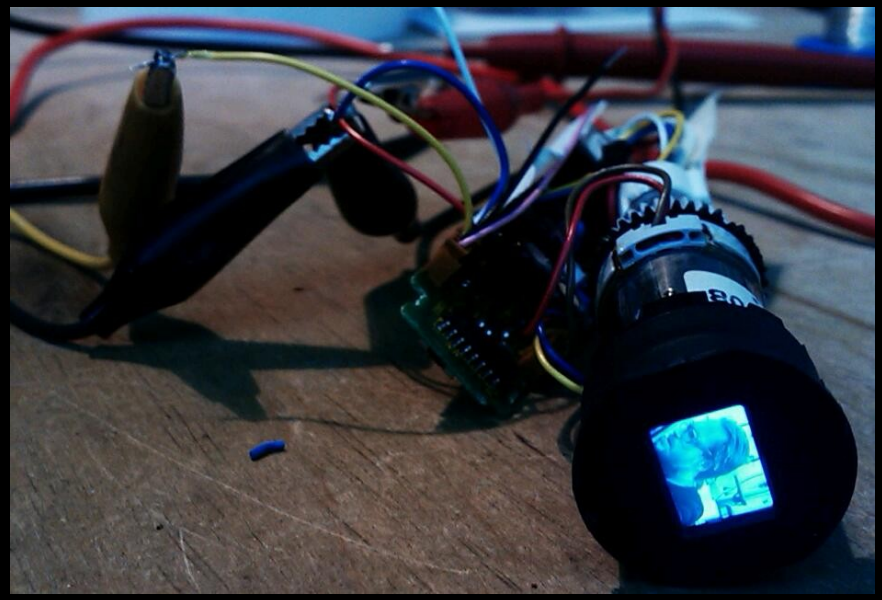
http://www.dusseiller.ch/labs/?p=1031

**Gmöttophon A/V - Prototype**
Lo-Fi instrument for visuals, projection, 2011

Concept and Realization: Marc Dusseiller
Technical Assistance: Niklas Roy & Feargal Parkes

I have been recently working on a new instrument: the Gmöttophon A/V. After the earlier series of musical/noise instruments, i wanted to build a new one that combines audio and visual experimentation, while keeping everything small. It combines a hacked CRT monitor from an old video camera with a simple circuit to mess up with the PAL video signal and the magnetic coils directly.

http://www.dusseiller.ch/labs/?p=1048



# Instruments

**Gmöttophon MK II**
Lo-Fi Synthesizer, Elektronik in Tupperware, 2008

Concept and Realization: Marc Dusseiller

This musical instrument combines simple electrronics into a playable 8-step sequencer with adjustable tones and noises. It can be used for electronic performances and also as a playful and explorable toy for people without a background in synthetic electronic music. I have performed with it at various events worldwide.

http://www.dusseiller.ch/labs/?p=151

**DIY Kamikazee Group / $H_2\Omega$**
Kollaborative Sound Performance, 2007 - 2011

Die Performance $H_2\Omega$ der diy kamikaze group wurde u.A. am Les Digitales, 2007 und 2008, La Chaux-de-Fonds, in der Reihe „Analog to Digital“ im Walcheturm, Zürich, am TWEAK Fest, Zürich, und am ANYMA 10 ANS Festival in Fribourg aufgeführt. Die Band um das Kernteam von Markus Haselbach, Ken Gubler, Robert Korizek, Christoph Stähli, Effi Tanner und Marc Dusseiller formiert sich für jede Performance neu und zählt 6-8 LöterInnen.
Basierend auf elementaren elektronischen Komponenten wie Widerstanden, Kondensatoren und integrierten Schaltungen lötet jeder zunächst sein Instrument. Sobald die ersten Schaltungen zum Leben erwachen, nach ungeähr 10 Minuten, werden sie sofort hörbar und ihre rauen Klänge verknüpfen sich in einer geplanten Improvisation zu Klanglandschaften, Rhythmen und neuartigen Klangteppichen voll hörbarem, rohen Strom-Klang.

http://www.dusseiller.ch/labs/?p=69

# Movies

**Hase Z'Nacht**
30 sec Animationsfilm, Stop Motion Technik, Januar 2008

2er Preis beim agent-provocateur.ch Wettbewerb 2008, Thema Angst. Die Preisverleihung fand im Rahmen der Solothurner Filmtage statt und der Film läuft nun in ausgewählten Independant-Kinos im Vorprogramm.

Regie, Animation, Kamera und Schnitt:
Marc Dusseiller und Philipp Hintermeister

Musik:
Marc Dusseiller

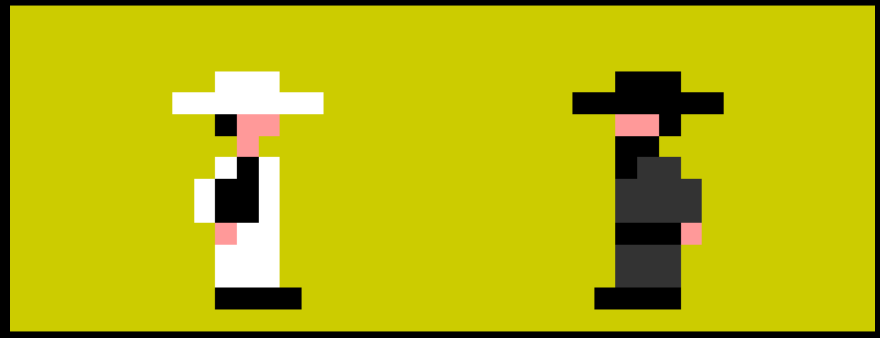
http://www.dusseiller.ch/labs/?p=77

**Duell**
10 sec Pixelanimation, Digitale Bildbearbeitung, July 2007

1er Preis am 5-10-20, Shortest Silent Movie Competition, 2007 veranstaltet von der Hochschule Luzern, Design & Kunst. Preisverleihung im Hauptbahnhof und Landesmuseum, Zürich.
Die Pixelanimation benutzt eigene Grafiken und solche aus alten Computerspielen, C64, und erzählt damit eine Geschichte in klassischer Hollywood-Manier in nur 10 Sekunden. An Spannung, Gewalt und Sex wurde nicht gespart und es versteht sich als Kritik des kontemporären inhaltslosen Konsumkinos.

Sämtliche Produktion von Marc Dusseiller

http://www.dusseiller.ch/labs/?p=53

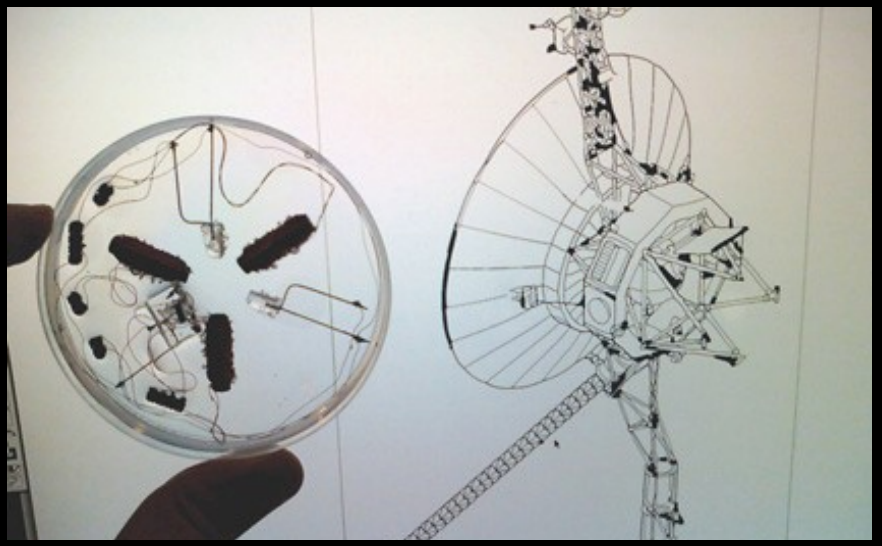


# Collaborations

**Deep Data Prototype**
Ongoing Project/Installation series by Andy Gracie and collaborators

Das Projekt, initiiert von Andy Gracie, wurde im Team während 15 Tagen entwickelt und die fertige Intallation anschliessend bis 24. März 2009 ausgestellt im Rahmen des Interactivos?09, MediaLab Prado, Madrid. Die Installation will den Bogen spannen vom menschlichen, wissenschaftlichen Erkundungsdrang, weiterzublicken, nach dden Ursprüngen unser Existenz, unser Universum zu verstehen, sowohl im astronomischen Sinn den Griff nach den Sternen, wie auch in der mikroskopischen belebten Umgebung. Das Projekt wurde weiter entwickelt und ausgestellt in Enter4, Prague, Arenas Movedizas, Gijon, Kapelica Gallery, Ljubljana, Abstract Machines, Hervidero, Gijon, Transbiotics, Riga, Latvia

http://www.hostprods.net/projects/deep-data/



**The Electric Retina**
Konzeption and Konstruktion der Skulptur: Prof Dr. Jill Scott
Mitarbeit an der Skulptur „The Electric Retina“ im Bereich Elektronik, Sensorik, Interaktion, Aufbau und Installierung: Marc R. Dusseiller

The Electric Retina is an interactive sculpture built by the artist Jill Scott. This project is the result of her residency at the Institute of Zoology (Zurich) neurobiological laboratory and is an artistic interpretation of the lab's research on zebrafish vision. This trans-disciplinary collaboration has served to communicate scientific findings to the general public. Moreover, learning different styles and modes of communication required for interfacing with the general public and with the artist has been a worthwhile experience for the scientists involved. The sculpture has been exhibited at the „175 Jahre Ausstellung der Universität Zürich“, the „Brain Fair 08“ in Zürich, ISEA 2008 (Singapore) and in November 2009 in Melbourne at the Super Human exhibition.

http://www.dusseiller.ch/labs/?p=120