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**State Secretariat for Education, Research and Innovation SERI**
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# Science-Switzerland, August – September 2013

*News on Swiss science, technology, education and innovation*

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### Marcel Benoist Prize Goes to Michael Graetzel

(news.admin.ch, August 30, 2013)

Michael Graetzel of the EPF Lausanne is the recipient of the 2013 Marcel Benoist Prize, which annually recognizes a scientist working in Switzerland for "the most usef ul scientific discovery or study, in particular in disciplines which are of significance for human life." A professor of physical chemistry, Graetzel directs the EPFL Laboratory of Photonics and Interfaces. He is known for the "Graetzel cell", an inexpensive, efficient dye-sensitive solar cell (DSSC). His invention established a new field of energy research that has started to bear commercial fruit. The Marcel Benoist Prize is the oldest scientific award in Switzerland, and is sometimes referred to as the "Swiss Nobel Prize."
http://swissinnovation.org/news/web/2013/06-130830-f5

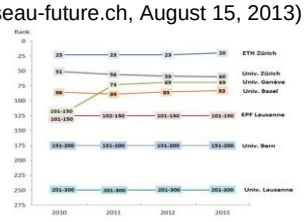
### 'Alternative Nobel Prize' for Swiss Agriculture Expert Hans R. Herren

(swissinfo.ch, September 26, 2013)

Hans R. Herren, founder of the Biovision Foundation for Ecological Development, was one of four people to be made a Laureate this year by the Swedish-based Right Livelihood Award Foundation. The 65-year-old was cited for "his expertise and pioneering work in promoting a safe, secure and sustainable global food supply". Among other achievements, Herren is credited with saving the lives of millions of Africans by successfully halting the destruction of cassava crops by mealy bugs, a plant pest. He identified a wasp found in Paraguay, as a far more ecologically sound and effective weapon to use against the bugs than pesticide spraying. 1.6 million wasps were dropped from aircraft across 24 African countries between 1982 and 1993, containing the problem far better than any chemical.
http://swissinnovation.org/news/web/2013/00-130926-d8

### Shanghai Ranking 2013: Four Swiss Universities Among the Top 100

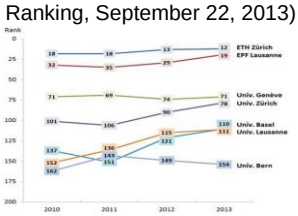
(reseau-future.ch, August 15, 2013)




The Shanghai Jiao Tong University's Academic Ranking of World Universities is one of the main ranking lists used to compare higher education institutions worldwide. As every year, the prestigious American universities divide among themselves the lion's share, with Harvard, Stanford and Berkeley coming out top. Holding the 20th slot (+3 compared to the previous year), the ETH Zurich is the best higher education institution outside of English-speaking countries. Six other Swiss universities appear in the Shanghai ranking, which lists a total of 500. The University of Zurich is 60th, the University of Geneva 69th and the University of Basel 83rd. Finally, the EPF Lausanne is ranked between 101st and 150th place, the University of Bern between 151st and 200th place and the University of Lausanne between the 201st and 300th place.
http://swissinnovation.org/news/web/2013/02-130815-d6

### QS Ranking 2013: Swiss Universities on the rise

(QS World University Ranking, September 22, 2013)




The QS Ranking is one of the main ranking lists used to compare higher education institutions worldwide. While the top places are held by the Massachusetts Institute of Technology and Harvard University, ETH Zurich is ranked 12th (1 place higher than in 2012), making it the best ranked university outside the US and UK. After a leap of ten places compared to last year, the EPFL has broken into the top 20 ranked 19th. Five other Swiss universities figure in the top 200: The University of Geneva has risen to 71st place, the University of Zurich has risen to 78th and the Universities of Basel, Lausanne and Bern are Ranked 110th,111th and 154th, respectively.
http://swissinnovation.org/news/web/2013/02-130922-76

### Switzerland Tops Global Competitiveness Index

(WEF, September 04, 2013)

For the fifth year running, Switzerland is at the top of the Global Competitiveness Index rankings. GCI scores are calculated by compiling data on 12 “pillars of competitiveness. T rends evident from this year’s Global Competitiveness Report 2013-2014 suggest that two of these pillars, innovation and institutions, are gaining importance. Other factors, however, can interfere, as in the United States, where concerns over macroeconomic stability are detracting from the country’s leadership in innovation, bringing it to number 5 in the rankings, behind Switzerland, Singapore, Finland, and Denmark. The newest entrants to the index are Lao PDR and Myanmar, with competitiveness rankings of 81st and 139th out of 148 economies.
http://swissinnovation.org/news/web/2013/00-130904-ec

### swissnex Boston Expands to New York

(CTI, August 27, 2013)

New York has always been amongst the most innovative cities in the world. Over the last few years, the city has become an important start-up hub - catalyzing success stories like Tumblr or Foursquare - now dubbed 'Silicon Alley'. To enable promising Swiss start-ups access to the abundant resources of Silicon Alley and to complement the swissnex services available in Boston and San Francisco, CTI Startup is establishing a new antenna of the CTI Entry Camp in the US. The CTI desk in New York is part of the new outpost of swissnex Boston that opened in August 2013. To learn more about the services of the New York Outpost, contact Pierre Dorsaz (Senior Project Leader) or Felix Moesner (Director, swissnex Boston).
http://swissinnovation.org/news/web/2013/00-130827-36

## 1. Policy

### Switzerland Is Part of “Horizon 2020” EU Research Framework

(ETH Zurich, September 12, 2013)

After votes by the Swiss National Council and the EU Council of States, the way is clear for Switzerland to continue its participation in EU research programmes. The “Horizon 2020” research framework is an umbrella for a wide range of measures for promoting research and innovation. Included are international collaborative projects with European partners, individual scholarships, and Starting Grants from the European Research Council. Switzerland will contribute about CHF 4.4 billion to the overall seven-year budget of approximately CHF 87 billion for the seven-year period 2014 to 2020. After the Swiss National Science Foundation (SNSF), EU programmes are the second most important independent source of funding for science in Switzerland.
http://swissinnovation.org/news/web/2013/01-130912-f2

### Education and Research Expenditure Rose 2.4% to $ 7.5 Billion

(SERI, September 27, 2013)

Federal expenditure on education and research rose to $ 7.5 billion in 2012, which is a 2.4 % increase over the previous year. This amount corresponds to 10.8% of total ordinary expenditure, which makes this task area the 4th largest in terms of volume of expenditure after social welfare (33.5%), finances and taxes (15.2%) and transportation (13.2%). A substantial proportion of the increase related to vocational education (+$103 million); this is in keep-

ing with the federal government's efforts to achieve a guideline figure of a quarter of public expenditure on vocational education. With a compound annual growth rate of 5.7% since 2008, federal expenditure on education and research has been increasing gradually but steadily.

## 2. Education

### Lino Guzzella Appointed President of ETH Zurich

(ETH Zurich, September 20, 2013)

The Swiss Federal Council has appointed Lino Guzzella, ETH Rector and Professor of Thermotronics, as the future ETH President. He will be taking over from Ralph Eichler who is retiring at the end of 2014. By taking this decision, the Swiss Government has endorsed the unanimous proposal made by the ETH Board. "I am very happy and proud at the confidence which the Federal Council and ETH Board have placed in me", Lino Guzzella said about his election. "but I also have immense respect for the responsibility of being asked to lead ETH, one of the finest universities of technology. To my mind, there is no more honourable position in the Swiss scientific community, but also no more challenging task, than to serve as President of ETH Zurich."
http://swissinnovation.org/news/web/2013/02-130920-e8

### First European Woman: Katharina Fromm named American Chemical Society Fellow

(University of Fribourg, September 11, 2013)

The University of Freiburg's Professor Katharina Fromm has been named a Fellow of the American Chemical Society (ACS). A researcher in the field of coordination chemistry for Nano-bio-materials, Professor Fromm was honored by the ACS, the world's largest chemistry association with over 165,000 members, for her outstanding research, teaching, and public outreach activities. She is the first European woman to ever receive this prestigious award.
http://swissinnovation.org/news/web/2013/02-130911-4c

### Female Students in the Majority

(NZZ, August 13, 2013)

In Switzerland, a majority of the students are female. However, there are differences depending on subject and University. Over all the Master's degrees awarded in 2012 (10,857 in total), 51% were awarded to women. In the French speaking Universities the biggest percentages of women studied. Female students prefer the humanities and social sciences, and pharmacy. The share of women was highest for veterinary medicine (78.6%). Men, on the other hand are dominating the fields of economy and natural sciences, as seen most strongly in the electromechanical engineering sciences, where only 12.4% were female.
http://swissinnovation.org/news/web/2013/02-130813-92

### Grants to Top European Scientists

(SERI, August 16, 2013)

The European Research Council (ERC) has selected 287 top scientists in its 6th Starting Grant competition, which awards nearly EUR 400 million. Grants, each worth up to EUR 2 million, were awarded to researchers of 34 different nationalities at 162 different institutions throughout Europe. For the first time, the proportion of female grantees reached 30% (2012: 24%). The grantees' average age is 34, and these domains won most awards: "Physical Sciences and Engineering" 44%, "Life Sciences" 38%, "Social Sciences and Humanities" 18%. Switzerland ranked sixth overall, with researchers at Swiss institutions securing over 7% (21) of the grants: ETHZ (8), EPFL (5), Universities of Basel (4) and Zurich (3), University Hospital Lausanne (1). Relative to population size, the most successful researchers are based in Israel, Switzerland and the Netherlands.
http://swissinnovation.org/news/web/2013/02-130816-2c

### Hansjörg Wyss Donates to Interdisciplinary "Balgrist Campus"

(NZZ, September 04, 2013)

A privately funded research facility is to be built nearby the University of Zurich Clinic in Balgrist. This multimillion-franc investment is to act as a place where researchers, institutions, specialists and engineers of private firms can come together to push existing boundaries in the realm of medicine. Hansjörg Wyss, the largest contributor to the project (CHF 14 Mio.), put it simply: "We put talents in a room together and then see what comes back out."

Currently, 1 in 3 adults in Switzerland have problems attributed to their musculoskeletal system that affect them in their daily lives. Researchers intend to use the facility to improve treatment in the field of Orthopedics. It is projected that the University Clinic will use 60% of the space whereas the rest will be used as "rent-space" for other institutions and specialists.
http://swissinnovation.org/news/web/2013/02-130904-6c

### E-Books for Vocational Training in Mechanical Engineering

(Swissmem, August 23, 2013)

Swissmem, the association of the mechanical and electrical engineering industry in Switzerland launched two interactive E-Books for vocational training in order to keep up with the increased mobility of young people and recent developments in communication technologies. The E-Book lets students read, study and solve exercises on their tablet anywhere they want. A corresponding teacher's version containing additional material like videos and animations allows for the integration of the E-Book in the classroom.
http://swissinnovation.org/news/web/2013/02-130823-2e

### Mobile STEM Laboratory for Primary School

(FHNW, August 27, 2013)


The MobiLab, a truck with a learning laboratory was inaugurated at the School for Teacher Education of the University of Applied Sciences and Arts Northwestern Switzerland (FHNW). The truck contains over 130 experiments on the topics of air, water, optics, electricity, magnetism and microscopy. An expert of the MobiLab team accompanies the teachers in integrating the experiments into their lessons. The project aims to familiarize schoolchildren in grades 4 to 6 with experimentation in chemistry, biology and physics in order to avoid the common fears and prejudices of students towards STEM subjects.
http://swissinnovation.org/news/web/2013/02-130827-4a

### MIT Neurotech Researcher Appointed Professor at ETH Zurich

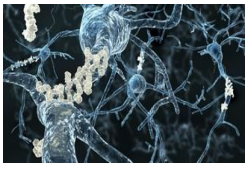
(ETH Zurich, September 27, 2013)

The board of ETH Zurich appointed six new professors. Among them is Professor Mehmet Fatih Yanik who's currently Associate Professor at the MIT. Mehmet Fatih Yanik's research focuses on understanding and decoding complex neural systems. This world-famous scientist works with methods and processes from microfluidics, micromanipulation, fast optical microscopy, machine learning, quantum physics, biochemistry and genetics. Mehmet Fatih Yanik will bring this wide range of methods to his teaching at ETH Zurich and introduce his students to innovative laboratory concepts such as DNA hybridisation, microfluidics and two-photon microscopy.
http://swissinnovation.org/news/web/2013/02-130927-5f

## 3. Life Science / Health Care

### Mechanism of New Alzheimer's Drug Unveiled

(EPFL, August 02, 2013)



EPFL scientists have unveiled how two classes of drug compounds currently in clinical trials work to fight the disease. Their research suggests that these compounds target the disease-causing peptides with high precision and with minimal side-effects. At the same time, the scientists offer a molecular explanation for early-onset hereditary forms of Alzheimer's, which can strike as early as thirty years of age. The conclusions of their research are very encouraging regarding the future of therapeutic means that could keep Alzheimer's disease in check.
http://swissinnovation.org/news/web/2013/03-130802-c3

### Asthma During Pregnancy Increases Risk of Illness in Children

(University of Basel, August 05, 2013)

Asthma has been known to cause complications during pregnancy such as reduced birth weight, premature births, and preeclampsia. However, research now indicates that children delivered of asthmatic pregnancies could suffer long-term consequences. In a study conducted by the University of Basel in collaboration with colleagues in Ger-

many, the USA, and Denmark, data collected from 66,000 expectant mothers suffering from asthma showed that their children are at a higher risk of developing infectious diseases, or diseases of the nervous system, ears, respiratory system, and skin compared to children whose mothers were not asthmatic when pregnant. The results of the study were recently published in "Pediatrics".
http://swissinnovation.org/news/web/2013/03-130805-3c

### Bacteria's War Machinery on the Nanoscale

(EPFL, August 05, 2013)

EPFL researchers have deciphered the attack strategy of certain bacteria, including the infamous Staphylococcus aureus. What they found is a veritable mechanics of aggression on the nanoscale: The bacteria have the ability to deploy tiny darts which, like biological weapons, kill the host cell by piercing the membrane. The researchers have dismantled, piece by piece, this intriguing little machine and found an assembly of proteins that, in unfolding at the right time, takes the form of a spur. After the bacterial weapon attaches to the cell surface, seven proteins assemble into a ring. When this assembly is exposed to an enzyme on the surface of the host cell, the proteins spread out in a circular motion to form a spur, which then pierces the membrane of the host cell.
http://swissinnovation.org/news/web/2013/03-130805-e4

### Elastic Spine Stabilization

(startupticker.ch, August 06, 2013)

Spinelab, a Swiss startup that develops innovative spinal treatment concepts, specializing in motion preserving stabilization systems, has received a landmark U.S. patent for Elastic Stabilization. The patent's main claim is a rod for flexible elastic stabilization of the segments between adjacent vertebrae with the connecting element being made of an elastic material, bendable elastically about every axis. "This U.S. patent is very generic and puts Spinelab in a clear leader position to use an elastomeric rod for tensile and compression forces in the spine", said Thomas Zehnder, President & CEO of Spinelab.
http://swissinnovation.org/news/web/2013/03-130806-91

### New Vaccine for Hay Fever in Clinical Trials

(anergis, August 09, 2013)

Allergies result when the body's allergic immune system fails to properly differentiate between safe and hazardous substances. The immune system usually protects the body from harmful, exogenous proteins, but it sometimes reacts excessively to hazard-free substances in our natural environment. In healthy individuals, the immune system either does not react to hazard-free substances or produces IgG antibodies that quickly eliminate the allergen. However, in allergy sufferers, the immune reaction triggers the production of IgE antibodies, provoking various symptoms including sneezing. EPFL researchers and Swiss-based company Anergis are developing vaccines against allergies that aim to rebalance the immune system. AllerT, a birch pollen vaccine, is in Phase II clinical trials, with Phase III trials planned in the US and Europe.
http://swissinnovation.org/news/web/2013/03-130809-fc

### The Nose and the Brain Identify Different Aspects of Smell

(University of Geneva, August 09, 2013)

Researchers at the University of Geneva have shown that the representation of an odor changes after the first inhalation and an after-smell persists in the central nervous system. This phenomenon resembles what happens in other sensory systems, like vision and hearing, in which sensory representations change during and after stimuli. Using brain imaging, the researchers discovered that most sensory activity is visible only during the presentation of odors, which implies that the persistence of the odor is largely internal to the brain and does not depend on the smell's physicochemical properties. Such changes may identify new smells in complex environments or help memorize odors. The research findings are published in PNAS (Proceedings of the National Academy of Sciences of the US).
http://swissinnovation.org/news/web/2013/03-130809-41

### Simple Method Measures Asthma Risk of Children

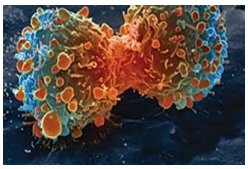
(University of Bern, August 12, 2013)

Many preschool children have wheeze or cough, but only some have asthma later. Existing prediction tools are difficult to apply in clinical practice or exhibit methodological weaknesses. The University of Bern has now developed new tool to better predict the asthma risk for preschool children. This tool represents a simple, low-cost, and

noninvasive method to predict the risk of later asthma in symptomatic preschool children, which is ready to be tested in other populations.
http://swissinnovation.org/news/web/2013/03-130812-a4

### Scientists Elucidate Cancer Cell Regulation

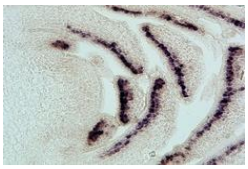
(EPFL, August 14, 2013)



Scientists at EPFL have discovered a cell regulation mechanism that could lead to new therapeutic strategies against cancer. Their research focuses on the protein STAT3, which mediates cellular response when a growth factor (EGF) binds to receptors on the cell membrane. The EPFL scientists discovered that a protein called calnexin acts, in cancer cells, to inhibit PIAS, which itself inhibits STAT3. By inhibiting the inhibitor, calnexin indirectly encourages the cell proliferation mediated by STAT3 in cancer cells. This role of calnexin as enhancer of the response to EGF was previously unknown. Furthermore, they found that calnexin senses the cell's ER (endoplasmic reticulum) stress, and in response, can interrupt its own inhibition of PIAS.
http://swissinnovation.org/news/web/2013/03-130814-5b

### Balancing Genetic Diversification and Harmful Mutations

(ETH Zurich, August 14, 2013)



The retrotransposon "Evadé" is a stretch of ancient viral DNA that inserts itself into parts of an organism's genome in order to multiply. Striking a balance between healthy amounts of multiplication to ensure genetic diversity and excessive multiplication that could lead to harmful mutations is, as scientists at the ETH Zurich have found out, governed by a complex feedback system in the plant Arabidopsis thaliana. In their pioneering investigation, the researchers elucidated the response and control mechanisms used by the plant to exploit Evadé to its genetic advantage without endangering itself using an innovative genetic trick to 'wake up' inactive retrotransposons. Their results were published in Nature Genetics.
http://swissinnovation.org/news/web/2013/03-130814-d2

### Optimized Biosensors for Cell Signal Pathways

(University of Basel, August 14, 2013)

Exploiting the principle of Fluorescence Resonance Energy Transfer (FRET), researchers at the University of Basel have developed a toolkit to speed up the otherwise complicated and long process of biosensor synthesis. Using elements from a biosensor library compiled by the research group of Professor Pertz, the components of this toolkit can be easily modified to suit different proteins of interest, and has already been shown to improve the biosensors of two proteins – GTPase RhoA and Kinase ERK. These sensors allow for the spatial and temporal visualization of cell signal pathways and operations, and can help address issues in cancer and neurobiology research.
http://swissinnovation.org/news/web/2013/03-130814-30

### New Treatment May Improve Efficacy of Chemotherapy in Cancer

(University of Bern, August 15, 2013)

Cancer cells often develop defense mechanisms that allow them to survive chemotherapy. Researchers at the Institutes of Pharmacology and Pathology in Bern have found new ways of preventing the development of chemoresistance, as reported in "Nature Communications". Auto-digestion autophagy is a process by which cells degrade damaged molecules by self-digestion, using the degradation products to generate energy and produce new molecules or cell parts. This is particularly useful when nutrients, oxygen and growth factors are absent. However, autophagy can also be used by tumor cells to survive stressful situations like chemotherapy. Digesting the damaged cell parts and renewing the cell causes resistance to therapy. The researchers discovered that autophagy of tumor cells can be suppressed pharmacologically, opening up potential new treatments for cancer.
http://swissinnovation.org/news/web/2013/03-130815-39

### Rapid Immune Response in Memory Cells

(University of Basel, August 19, 2013)

Publishing in Nature Immunology, researchers at Basel University and University Hospital showed that CD8 memory cells in the immune system responsible for reacting to familiar pathogens do so by changing their metabolism rapidly. This process occurs within minutes of recognizing the pathogen, and allows the CD8 memory cells to produce effector molecules that help destroy virus-infected cells. Understanding the molecular basis of cell metabolism in the immune system remains an ongoing research interest of Professor Christoph Hess and his group, as they hope to understand the various therapeutic approaches of the immune system.
http://swissinnovation.org/news/web/2013/03-130819-8e

### Predicting and Controlling Gene Expression in Yeast

(EPFL, August 19, 2013)

The processes at work in producing proteins from genes, also called gene expression, are extremely complex and depend on many different factors that are all interconnected. Genes are not simply turned "on" or "off", and the amount of proteins that they produce can vary. Researchers from EPFL shed some light on these processes and developed a guide to gene expression that shows how the amount of proteins produced can be controlled. "We're only just beginning to understand the phenomena involved here," says Professor Maerkl, senior author of the study, "but the work is promising. If we can understand the biology better we should be able to artificially engineer better-performing cells - cells that are optimal for producing biofuels or antimalarial drugs, for example."
http://swissinnovation.org/news/web/2013/03-130819-d3

### Human Antibody to Treat Severe Lower Respiratory Tract Infections

(sciencedaily.com, August 20, 2013)

A unique human monoclonal antibody (MPE8) has been discovered by the Swiss Biotech company Humabs Bio-Med SA, in collaboration with the University of Italian Switzerland (USI). Humabs, a privately owned spin-off company of the university's Institute for Research in Biomedicine (IRB), is focusing on the discovery of next-generation human monoclonal antibodies to treat infectious and inflammatory diseases. The study, reported in "Nature", was partially funded by the Swiss National Science Foundation and the European Research Council. MPE8 is the first neutralizing antibody that targets four different human and animal viruses, including the respiratory syncytial virus (RSV) and the metapneumovirus (MPV) that cause severe lower respiratory tract infections. MPE8 represents a new promising drug for the prophylaxis and the therapy of respiratory infections in infants and immunosuppressed patients.
http://swissinnovation.org/news/web/2013/03-130820-08

### Promising Immunosuppression for Hand Transplantations

(Inselspital Bern, August 21, 2013)

Hope for hand amputees: researchers at Inselspital and the University of Bern have successfully tested a new method for local immunosuppression. For hand transplantation after an accident patients have to be immunosuppressed, i.e. their total immune system has to be brought down with drugs to prevent their organism rejecting the foreign tissue. A research team from the Department of Plastic and Hand Surgery, Inselspital, and the Department of Clinical Research (DKF) of the University of Bern is now however investigating ways to replace systemic (total) immunosuppression with a local treatment of the transplanted limb. In laboratory experiments the results have been very promising.
http://swissinnovation.org/news/web/2013/03-130821-ea

### Improved Tumor Targeting with Modified Peptides

(University of Basel, August 21, 2013)

Researchers at the University of Basel have developed a new method to modify peptides used to target tumors that resist the breakdown mechanisms of enzymes. Up to five times more stable than its unmodified version, the modified peptide is created using click chemistry methods to replace amide bonds with triazoles within the molecule. Doing so has been shown in cell and animal experiments to cause successful binding of the peptide to tumor cells as well as its increased uptake by tumors. The researchers are confident that their new and efficient method of peptide synthesis will have widespread use in tumor targeting, molecular imaging, drug delivery, and endoradiotherapy.
http://swissinnovation.org/news/web/2013/03-130821-a0

### Hemochromatosis Makes Patients Grow Taller

(20min.ch, August 22, 2013)

Researchers of the University Hospital in Zurich studied patients suffering from hemochromatosis - the most frequent genetic disorder in Western Europe that leads to an oversupply of iron in the blood. While patients have an advantage during infacy and puberty because of an increased requirement, the heightened iron levels can lead to damage by iron depositions in the liver, pancreas and joints later in life. The study also found that patients 4 centimeters taller than the Swiss population on average. Treatment of the disease is relatively simple: It consists of regular blood withdrawals to keep iron to a healthy level.
http://swissinnovation.org/news/web/2013/03-130822-e7

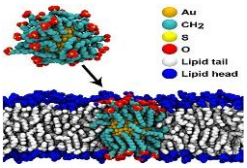
### Mother's Milk Transmits Good Bacteria to Newborns

(ETH Zurich, August 22, 2013)

Researchers from ETH Zurich showed for the first time that beneficial bacteria from the gut of the mother are transmitted through breast milk to the intestine of the newborn. They found that the stool of newborns contains the same strains of bacteria found in stool and breast milk samples of their mothers. "These bacteria ensure a healthy intestinal flora and strengthen the development of the immune system of the newborn," explains Christophe Lacroix, one of the study authors. By what route the bacteria make their way from the intestines into the breast milk is yet unclear and will be investigated in another research project.
http://swissinnovation.org/news/web/2013/03-130822-1b

### EPFL and MIT Discover Cell Penetration Mechanism for Gold Nanoparticles

(MIT, August 23, 2013)




Cells are very good at protecting their precious contents - and as a result, it's very difficult to penetrate their membrane walls to deliver drugs, nutrients or biosensors without damaging or destroying the cell. One effective method that has been discovered a couple of years ago is to use nanoparticles of pure gold, coated with a thin layer of a special polymer. But only now, researchers at MIT and the EPFL in Switzerland have figured out how exactly the process of internalization works, and the limits on the sizes of particles that can be used. The team demonstrated that the crucial first step in the process is for coated gold nanoparticles to fuse with the lipids that form the cell wall.
http://swissinnovation.org/news/web/2013/03-130823-c5

### New Function for Messenger Molecule Interleukin-7

(ETH Zurich, August 26, 2013)

The molecule interleukin-7 (IL-7) is an important immune messenger protein which ensures that a sufficient number of T cells are present in our body for immune defense. Researchers from ETH Zurich have now demonstrated that IL-7 has another important function: it enhances the drainage function of lymphatic vessels, which collect fluid that has leaked out of blood vessels into the body tissue and return it to the bloodstream. In the future, this finding could become useful for lymphedema patients, whose lymphatic drainage system does not work properly, resulting in fluid accumulation and tissue swelling.
http://swissinnovation.org/news/web/2013/03-130826-37

### Non-Invasive Surgery Technology Awarded

(news.admin.ch, August 27, 2013)

Non-invasive or minimally invasive surgery would greatly expand treatment options for patients, but in order to work, it needs a complex, sophisticated navigation system. In recognition of such a system, the Swiss Commission for Technology and Innovation (CTI) presented the CTI Medtech Award 2013 to the firm CAScination and the ARTORG Center for Biomedical Engineering at the University of Bern. The system developed by Stefan Weber (University of Bern) and his former doctoral student, Martin Peterhans, now CEO of CAScination AG, uses a virtual model of the patient's organ, coordinated with stereo infrared imagery of the positions of surgical instruments. The system is expected to enable non-invasive surgery to treat solid organ metastases.
http://swissinnovation.org/news/web/2013/03-130827-3c

### Why Smokers Gain Weight When They Quit

(SNSF, August 29, 2013)

When smokers wave goodbye to their cigarettes, eighty per cent of them put on seven kilos on average. Their weight increases even if their calorie intake remains the same or even falls compared to the level before quitting smoking. Researchers from the University Hospital in Zurich attribute the cause to a changed composition of the bacterial diversity in the intestine. Giving up smoking resulted a shift where the Proteobacteria and Bacteroidetes fractions increased at the expense of representatives of the Firmicutes and Actinobacteria phyla. The former two have also ben found to be prevalent in the guts of obese people.
http://swissinnovation.org/news/web/2013/03-130829-5c

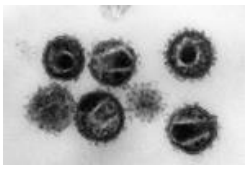
### CTI Medtech Award for Nontoxic Skin Scaffold

(Empa, August 30, 2013)

Empa and the Lucerne-based company nolax have developed a cell carrier or 'scaffold' from bio-compatible, degradable plastic material that should help wounds to heal. This scaffold – a sponge-like foam made of flexible polyurethane – can be adapted to the exact shape of the wound. Over time, the scaffold should be populated by connective tissue cells. At the same time the body breaks down the foam. All that should remain is a newly formed layer of skin. "In the animal model the closure of the wound with the scaffold was even better than we had hoped at the start of the project", said Arie Bruinink, a researcher at Empa who worked on the project. In addition, there were initial signs that scarring would be reduced.
http://swissinnovation.org/news/web/2013/03-130830-29

### Model Accurately Predicts Response to HIV Therapy

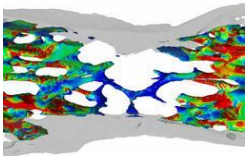
(SNSF, September 02, 2013)



The HI virus is feared, not least, because of its great adaptability. If the virus mutates at precisely the point targeted by a drug, it is able to neutralize the attack and the treatment fails. A new statistical model developed by researchers at the University Hospital in Zurich calculates the genetic evolution of the HI virus in individual patients. The model makes it possible to predict treatment success more accurately than with existing models and will enable doctors to identify which of over 30 established therapies is best suited to a patient.
http://swissinnovation.org/news/web/2013/03-130902-af

### Bone Resorption and Formation Re-examined Through Mechanical Stimuli

(ETH Zurich, September 02, 2013)



Researchers from ETH Zurich have used bone tissues through lab experiments and simulations on the CSCS supercomputer "Monte Rosa" which has revealed that 80 per cent of bone formation, or resorption (bone breakdown), is controlled by mechanical stimuli. According to the researchers, the results also confirm the assumption that bone substance is formed where it is needed. Results also show that a lack of oestrogen receptors limits targeted bone resorption.
http://swissinnovation.org/news/web/2013/03-130902-74

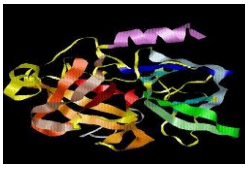
### Fish Embryos Have Protection Mechanism against Chemicals

(EAWAG, September 03, 2013)

Researchers at Eawag, the Swiss aquatic research institute and colleagues from Helmholtz Centre for Environmental Research (UFZ), have discovered a protein which moves chemicals out of the embryo in the zebrafish while protecting the embryo from toxic substances. However, some environmental chemicals render this protective mechanism making it ineffective, so fish embryos are more susceptible to toxic substances. Further, the study, published in the scientific journal "BMC Biology", could prove to be of great importance for the future assessment of chemicals.
http://swissinnovation.org/news/web/2013/03-130903-a2

### Nano-Transmitter for Use in Gene Therapy

(University of Basel, September 04, 2013)



Researchers at the University of Basel have developed a peptide-based nano-transmitting system. These peptides can assemble themselves in water to as large as 200nm spheres. This new system could be used for the transport and protection of different cargo molecules. It also shows promise in curing a wide range of diseases at the gene level; for example, replacing a defective gene within the cell with an intact one. Nano-transport systems are now being regarded as the answer to protect the body's gene sequences from premature degradation. The peptide-based system developed by Prof. Wolfgang Meier of the University's Chemistry Department is made of purely bodily materials; their degradation process is well understood by scientists and the amino acid building blocks make the application thereof extremely versatile, especially for medicinal purposes. The Gerbert Rüf Foundation & the Lassco SA Co. support this project, also with collaboration with the Department of Pharmaceuticals at the University of Basel.
http://swissinnovation.org/news/web/2013/03-130904-bf

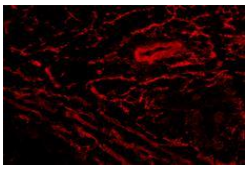
### New Diabetes Treatment

(University of Geneva, September 03, 2013)

Worldwide, millions of people suffer from a deficiency of insulin, a hormone secreted by the pancreas that regulates energy substrates, like glucose. This deficiency, mainly caused by diabetes types 1 and 2, has lethal consequences if left untreated. Until now, patients depended on daily insulin injections to survive. However, this treatment often has serious side effects. As reported in “Cell Metabolism”, researchers from the University of Geneva have shown that insulin is not essential for survival and identified the underlying mechanisms. In experiments on rodents, the researchers administered leptin, which acted on glucose levels, enabling all subjects to survive their insulin deficiency. Unlike insulin, leptin does not cause hypoglycemia and has a lipolytic effect. This could provide the basis for new diabetes treatments.
http://swissinnovation.org/news/web/2013/03-130903-53

### Fighting Leukemia with Modified Antibodies

(University of Bern / ETH Zurich, September 05, 2013)



In collaboration with partners including the University of Bern and Bern Hospital, Professor Dario Neri’s research group at the ETH Zurich has gained promising results using Vascular Targeting to treat leukemia in mice models. Publishing in Science Translational Medicine, the group exploits the natural response of the immune system to attack tumor cells with antibodies which bind to proteins produced by the tumor during the formation of new blood vessels. It is to these antibodies that the scientists couple an immune system messenger called Interleukin-2. Arming the antibodies in this way results in a more effective and targeted immune response which is especially critical in the case of leukemia, whose cancer cells are distributed throughout the bloodstream instead of manifesting as a solid tumor. More clinical studies are planned for the future.
http://swissinnovation.org/news/web/2013/03-130905-28

### Gold Nanoparticles Allow to Study Biomolecules in Water

(EPFL, September 06, 2013)

Researchers at EPFL can now observe biomolecule interactions in a sample of water in real time - thanks to a new device that is the size of a human hair. The process brings together infrared detection techniques and gold nanoparticles. As there is currently no reliable way of examining both the behavior and the chemical structure of molecules in a liquid in real time, this technique is of major interest for the scientific community. "Our technology could prove useful for studying the behaviour of proteins, medicines and cells in the blood or pollutants in water", says Hatice Altug, associate professor of bioengineering at EPFL, who lead the research.
http://swissinnovation.org/news/web/2013/03-130906-b9

### Structures of DNA Machines Elucidated

(ETH Zurich, September 13, 2013)

The structures of two of the largest machines responsible for packing and unpacking DNA, also known as Chromatin Remodeling Complexes, have been elucidated thanks to a combination of electron microscopy and mass spectrometry techniques. Responsible for this groundbreaking work is an international team that includes ETH Zurich’s Professor of Molecular Systems Biology Ruedi Aebersold, whose research group developed a way to analyze interactions between proteins within a protein complex and to determine their relative positions spectrometrically. Understanding the structure of these DNA packing machines responsible for organizing genes will lead to new and important insights on gene structure and activity.
http://swissinnovation.org/news/web/2013/03-130913-85

### Activating Self-Control in the Brain

(CNN, September 14, 2013)

Using functional magnetic resonance imaging, scientists have seen how two regions of the brain, the ventral medial cortex and dorsolateral prefrontal cortex, become activated when valuing options involving self-control such as meal choices among dieters. Now, Assistant Professor of Neuroeconomics at the University of Zurich Todd Hare is optimistic that transcranial magnetic stimulation (TMS) may be able to train these regions to come online during tough decision-making processes. According to Hare, the interaction between these two parts of the brain is strongest amongst people who exhibit greater self-control with money or food, and using TMS to enhance their activity could, in theory, help people make better choices. Already being used to treat depression in patients who do not respond to medication, Hare believes using TMS is the “logical next step”, and is an viable alternative to drugs, since drugs cannot selectively target specific parts of the brain without affecting others.
http://swissinnovation.org/news/web/2013/03-130914-e3

### New Map of Human Functional Genetic Variation

(University of Geneva, September 15, 2013)

European scientists measured and mapped gene activity (i.e. gene expression) by sequencing RNA in human cells from 462 individuals, whose full genome (DNA) sequences had already been published. The study involved more than 50 scientists, led by researchers from the University of Geneva (UNIGE) Faculty of Medicine, in the context of the GEVAUDIS (Genetic European Variation in health and Disease) project. The mapping of variation in gene expression will help scientists understand how an individual's genome influences susceptibility to particular diseases, and yield clues for diagnosis, prognosis, and intervention. Comprising the largest-ever human RNA sequencing dataset, all of the study data are available in an open-access archive.
http://swissinnovation.org/news/web/2013/03-130915-0b

### Nuclear Pores also Involved in Transcribing Genes

(University of Geneva, September 24, 2013)

Our genetic heritage is preserved in the cell nucleus. Gene activity is determined by DNA sequences, by the genome's dynamic three-dimensional structure and by DNA movement to different cell compartments. DNA copies transit from the cell nucleus through nuclear pores into the cell cytoplasm, where they are translated into proteins. Researchers at the Faculty of Science of the University of Geneva have discovered how nuclear pores, made of nucleoporins, regulate the speed of DNA replication. Published in Molecular Cell, the study also shows that the hundreds of pores in each nucleus constitute very efficient microscopic gene transcription factories. Nucleoporins, some of which are even mobile, anchor different enzymes, including one that removes the SUMO protein that blocks the GAL1 enzyme regulating glucose breakdown.
http://swissinnovation.org/news/web/2013/03-130924-23

### Caffeine Consumption Slows Brain Development

(Swiss National Science Foundation, September 24, 2013)

Humans and other mammals show particularly intensive sleeping patterns during puberty. The brain also matures fastest in this period. Researchers at the University Children's Hospital in Zurich have studied the effects of caffeine intake during puberty in rats and observed that a caffeine consumption equating to three to four cups of coffee per day in humans results in reduced deep sleep and a delayed brain development. This result is disquieting because in fact, children's and young adults' average caffeine consumption has increased by more than 70 per cent over the past 30 years, and an end to this rise is not in sight: the drinks industry is posting its fastest-growing sales in the segment of caffeine-laden energy drinks.
http://swissinnovation.org/news/web/2013/03-130924-70

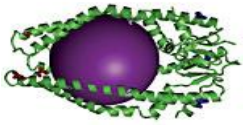
### Niacin Prolongs Life of Roundworms

(ETH Zurich, September 30, 2013)

In a study with roundworms professor Michael Ristow from ETH Zurich showed that the vitamin niacin has a life-prolonging effect. From his study he also concludes that so-called reactive oxygen species are healthy. This finding disagrees with the general consensus that considers reactive oxygen species to be harmful: Based on the current and many previous findings Ristow is convinced that small amounts of reactive oxygen species and the oxidative stress they trigger have a health-promoting impact. "Cells can cope well with oxidative stress and neutralise it," he says. The results of the study may also be of relevance for humans, as the metabolic pathway initiated by niacin is very similar in roundworms and higher organisms.
http://swissinnovation.org/news/web/2013/03-130930-68

### Transport Mechanism of Pore Proteins

(University of Basel, September 30, 2013)



The outer membrane of bacteria contains many proteins that form tiny pores. They are important for absorbing nutrients and transmitting signals into the cell. Researchers at the Biozentrum at University of Basel have shown for the first time at atomic resolution how these pore proteins are transported from the location where they're made to the cell membrane. "Amazingly, the unfolded protein changes its state constantly – faster than thousand times per second and more than ten million times during the crossing," explaines Sebastian Hiller who lead the research. Transporting the membrane protein in such a changing state does not require energy and allows for its rapid release at the destination.
http://swissinnovation.org/news/web/2013/03-130930-9e

### Caries Treatment Without Drilling

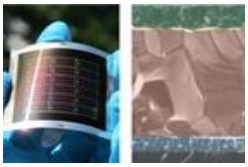
(20min.ch, September 08, 2013)

Until now, the only way to stop caries was drilling, as caries damage on the teeth does not heal. Now, a product by the Swiss company Credentis offers a new way of treating caries. The product uses the natural remineralisation process of teeth to cure early damage on enamel and dentin. For the dentist this is a new means to treat damaged teeth without drilling and filling, and for the first time they can offer a real cure for caries. Such a treatment gives additional value and importance to the annual recalls (dental hygienist treatment, dental control visit).
http://swissinnovation.org/news/web/2013/04-130908-b0

## 4. Nano / Micro Technology / Material Science

### Improved Efficiency of Flexible CdTe Solar Cells

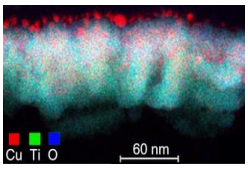
(Empa, August 13, 2013)



Flexible thin film cadmium telluride (CdTe) solar cells that can be easily mass produced are attractive for harvesting easy and low cost solar energy. The major challenge faced is reaching acceptable efficiency levels for solar cells manufactured on a cheap, opaque substrate (instead of a transparent superstrate). Now, researchers at Empa, the Swiss Federal Laboratories for Materials Science and Technology, have demonstrated that carefully controlled doping of CdTe solar cells with copper increases efficiency up to 11.5% from below 8%. The doping improves the electronic properties of the material by increasing the density of positive charge carriers.
http://swissinnovation.org/news/web/2013/04-130813-f3

### New Antibacterial Adhesive Film

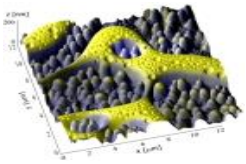
(EPFL, August 16, 2013)




Scientists at EPFL have created stable, uniform, and highly-adhesive antimicrobial films with fast antibacterial action through a new method called "Highly Ionized Pulsed Plasma Magnetron Sputtering". Tested in hospitals, this process shows enormous potential in providing sterile usage and protection from nosocomial infections. Antimicrobial films that inhibit the growth of micro-organisms like bacteria, fungi or viruses still remain a problem because many of them are not stable and their preparation methods are hard to enforce consistently.
http://swissinnovation.org/news/web/2013/04-130816-20

### Unique Surface Analysis Instrument: 3D NanoChemiscope

(Empa, August 22, 2013)



Researchers at Empa have developed and combined well-known microscopic and mass spectroscopic methods into a new analytical tool dubbed 3D NanoChemiscope. This instrument, which is unique in the world, not only maps samples with nanometre precision, but for the first time can also provide precise information about which chemical elements are arranged where in a sample. This enables both mechanical properties, such as hardness, elasticity or friction, and chemical properties of surfaces to be determined simultaneously in three dimensions.
http://swissinnovation.org/news/web/2013/04-130822-8a

### Soundproof, Transparent Curtains

(Empa, September 17, 2013)

Textile designer Annette Douglas received another award for her soundproof transparent curtains that she created in collaboration with Empa. She received her fifth award, the “EESC European Award 2013” from the European Economic & Social Committee for excellent design and sustainability. Through her partnership with Empa and Weisbrod-Zünner, she was able to create lightweight, light-permeable, flameproof and soundproof curtains. For the young British-Swiss dual-citizen, the EESC Award is a special honour: “I am very happy, as part of a Swiss Project, to be recognized with an EU-Distinction.” From 90 projects, 5 were selected- therein, the “Silent Space Collection” by Annette Douglas Textile Acoustics.
http://swissinnovation.org/news/web/2013/04-130917-dc

### Graphene as very Low Resistance Conductor

(University of Basel, August 20, 2013)

Graphene, a single atomic layer of carbon atoms, is considered a very promising material in many domains. It is thermally conductive, transparent, and mechanically robust. Now, researchers at the University of Basel have shown that the material can also conduct electricity with very low resistance. To properly manufacture the material, a layer of graphene was purified with heat in a helium chamber and then spanned through free space for several micrometers between supports. This step was needed because graphene is typically grown on a silicon substrate, which disturbs the electrical properties of the material. Graphene, with this newly demonstrated property, potentially has even greater applications.
http://swissinnovation.org/news/web/2013/04-130820-44

### Composites for High-Tech Catamarans

(EPFL, September 23, 2013)

Two teams are representing Switzerland at the 'Little America's Cup' in Falmouth, UK. Their hydrofoil catamarans were developed and constructed by an exceptional cluster of excellence around Lake of Geneva: Firstly, the boats are assembled in a shipyard in Ecublens. Their construction puts great emphasis in the use of revolutionary materials whose development has been made possible by the involvement of several EPFL units. Finally, the raw material used to build the boats' structure and wings is manufactured in Penthalaz. Their specialty is the use of carbon fiber and thin film glass composites - materials that have previously been used for the famous Alinghi "black sails" and some of the most important parts of the second Solar Impulse airplane.
http://swissinnovation.org/news/web/2013/04-130923-d5

## 5. Information & Communications Technology

### Efficient Digital Scene Reconstruction

(ETH Zurich, August 05, 2013)

Nowadays, many movies have digital elements, such as backgrounds, that are added during post-production editing. These elements are recorded and then digitized before being added to the movie. Traditionally, laser scanning following by manual coloration was used to create these elements, but this is inefficient and color information is not captured automatically. Now, researchers from ETH Zurich, together with Disney Research Zurich, created a new technique that uses a series of high resolution images to simultaneously reconstruct a three-dimensional model of a scene and capture its color. Their algorithm improves greatly on previous, similar algorithms; it takes tens of minutes instead of hours to output a higher quality product.
http://swissinnovation.org/news/web/2013/05-130805-79

### Computer Simulation Explains Ice Age Cycles

(ETH Zurich, August 08, 2013)

Using computer simulations, a team of scientists from Tokyo University, ETH Zurich and Columbia University has shown how feedback effects generated by continents and climate explain ice age cycles of 100,000 years. The primary phenomenon underlying climate cycles is insolation, which has shorter cycles. The new model combines an ice-sheet simulation with an existing climate model, to integrate influences of continental ice sheets and climate. For example, when a continent is covered with thick ice, it has different reflective power, which causes change in surface temperatures, atmospheric air circulation, and ocean currents. When the feedback effects are superimposed on the insolation cycles, the stronger 100,000-year cycle becomes evident.
http://swissinnovation.org/news/web/2013/05-130808-1d

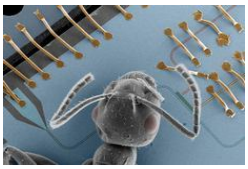
### IT Risk Management Solution for Largest African Bank

(startupticker, August 12, 2013)

The Commercial Bank of Africa (CBA), one of East Africa's largest privately owned banks, has made NetGuardians' NG|Screener solution its choice for fraud mitigation and risk management. CBA, which has operations in Kenya and Tanzania, is the first bank in East Africa to deploy NG|Screener. The move further strengthens NetGuardians' client base and reputation on the African continent. As a comprehensive risk management solution based on intelligent behavioral analysis, NG|Screener will help protect the bank against particular challenges like tracking of IT and business user activity, forensic analyses, and reporting and compliance.
http://swissinnovation.org/news/web/2013/05-130812-27

### Quantum Teleportation in Electronic Circuit

(ETH Zurich, August 15, 2013)



Quantum teleportation allows information to be moved from one location to another without a physical carrier moving the information. The information simply appears at the destination. This is achieved through quantum entanglement of the sender and receiver. While this has been demonstrated previously, ETH Zurich researchers were now able to demonstrate this type of communication on an electronic circuit instead of an optical one. They also created a mechanism to ensure that the information is always read correctly at the receiving end. Using quantum bits for communication is more efficient than traditional bits, and the technology is expected to be a key future technology.
http://swissinnovation.org/news/web/2013/05-130815-bf

### Vehicle Parking Detection Systems for Trucks

(startupticker.ch, August 15, 2013)

Tinynode, a Swiss startup from Lausanne develops car detectors for outdoor parking. Their system allows for the integration of on-street parking spaces into traffic management systems. In a large-scale project, 26 truck parking areas on French highway have now been equipped with Tinynode's wireless vehicle detectors. The parking vehicle detection system is coupled with a display system, allowing truck drivers to plan their compulsory rest breaks on service areas where free parking spaces are available. This allows them to avoid resources and time waste, which leads to an improved safety on service areas.
http://swissinnovation.org/news/web/2013/05-130815-fc

### Statistics on Internet Use in Switzerland

(ICTjournal, August 19, 2013)

The semi-annual report titled "NET-Metrix-Base" has been produced, covering the period October 2012 through March 2013. Statistical trends show the Swiss population becoming "heavy users" of the Internet, with more than 85% (5.4 million people) connected. Only about 1 million remain unconnected, compared to 2 million 10 years ago. The NET-Metrix report also compares Internet use by region, by gender, by age, and by level of education. Even in the 50+ age group, penetration is 68.5%, and for people under 30, it is near 99%. Likewise, although high levels of education correlate with the highest usage, almost 70% of people with only basic schooling are regular Internet users.
http://swissinnovation.org/news/web/2013/05-130819-d7

### Smartphone Apps Replace Loyalty Cards

(ICTjournal, August 21, 2013)

Retailers strive to build consumer loyalty and encourage shoppers to return to their shops. To help them, Swiss start-ups are replacing traditional cards with smartphone solutions. Aixum Tec, acquired in 2012 by MobileBits, launched its iPhone app linking merchants and their customers in Switzerland and Liechtenstein. Now available for Android, BlackBerry and Windows Phone 7, the Samy app enables users to collect points, and receive gift cards and promotions. It is now used i.a. by McDonald's, Spar and Manor in Europe. Other Swiss start-ups, like Poinz and Kireego, have developed apps that replace points cards. Such solutions give retailers access to sales statistics, enabling them to send targeted promotions to customers and quickly increase revenues. Kireego also helps traders create partnerships and networks.
http://swissinnovation.org/news/web/2013/05-130821-3b

### Software to Enable Real Eye Contact in Skype

(ETH Zurich, August 27, 2013)

For many users of Skype and other video conferencing tools, there is frustration built into the technology, because natural eye contact doesn't occur. At the Computer Graphics Laboratory ETH Zurich, scientists are developing software to make a video conference feel like a real meeting. The technology uses a new type of camera that collects color and depth information simultaneously. The software makes a depth map from the image information and integrates face recognition. While you are looking at the image of your counterpart on your computer screen, the software adjusts the position of your face as it appears on your counterpart's screen. A Skype plug-in is planned.
http://swissinnovation.org/news/web/2013/05-130827-18

### Google Faculty Research Award for the University of Fribourg

(University of Fribourg, August 23, 2013)

Prof. Philippe Cudré-Mauroux of the department of computer science at the University of Fribourg has been granted the Google Faculty Research Award. The price of USD 60'000 is going to finance a research project which tries to improve the results of web searches by the means of crowd-sourcing.
http://swissinnovation.org/news/web/2013/05-130823-6b

### Technology Breakthrough in Mobile Advertising

(PRweb, September 01, 2013)

Adello, a leading Swiss programmatic media-buying platform for mobile advertising, merges with HStreaming, an award-winning Big Data company, to disrupt the mobile advertising space with breakthrough technology. HStreaming was born out of a patented technological breakthrough that is now basis to disrupt programmatic buying with unprecedented targeting accuracy. "The technology is so powerful that we update our targeting strategies 100,000 times a second which gives our customers unprecedented performance," says Mark Forster, CEO and founder of Adello. The clients agree: "Adello allows us to save 30% vs. our previous campaigns while targeting the right audience," says Cornelia Rutishauser, Head of Marketing at EMI Music Switzerland. The merged company is operating in the US, UK, Switzerland, Germany, Poland, Austria, and Hungary.
http://swissinnovation.org/news/web/2013/05-130901-ea

### Supercomputer Boosted with Graphic Processors

(ETH Zurich, September 12, 2013)


The supercomputer “Piz Daint”, which has been in operation at the national supercomputing centre (CSCS) since April, is presently being extended with graphic processing units (GPU) from processor manufacturer NVIDIA. In this extension, one of two conventional processor (CPU) located on a compute node is being replaced by a GPU. Compared to a conventional CPU, the GPU has reduced functionalities that are optimized for numerical calculations. In simple terms, this enables the GPU to compute much faster, while saving energy.
http://swissinnovation.org/news/web/2013/05-130912-1e

### Conquering Summits with an App: Peakhunter

(20min.ch, September 15, 2013)

What started as a simple problem of not being able to find the last entry in his Summit Log inspired Appenzeller native and mountain climbing enthusiast Philipp Ringli to create Peakhunter, a Digital Global Summit Log. Now available for iOS and Android, the App allows users, known as “Hunters”, to log the precise time, date, and GPS coordinates of their climbs. Hunters can also connect with fellow Hunters, use maps without internet connection, and contribute to the growing GPS coordinate database of over 300,000 peaks. This Appenzeller start-up has been hailed as the “Facebook for Hikers”, and continues to bring the digital age to the classic outdoor experience.
http://swissinnovation.org/news/web/2013/05-130915-5a

## 6. Energy / Environment

### More Sustainable Dye-Sensitized Solar Cells

(University of Basel, August 02, 2013)

Dye-sensitized solar cells (DSCs) use a dye on a semiconductor to convert solar energy to electricity. Typically, iodine and iodide are used to make electrolytes that facilitate electron transfer in DSCs. However, iodine is a rare element and it reacts with copper in DSCs to reduce their efficiency. Researchers at the University of Basel were able to replace iodine with cobalt, an element that is more abundant and less reactive with copper, and this change was made without any loss in efficiency. The new design needs to be reoptimized for the new element, but it is a promising step towards more sustainable solar cells.
http://swissinnovation.org/news/web/2013/06-130802-bd

### Tohoku Earthquake Moved Tectonic Plate Boundary

(ETH Zurich, August 05, 2013)

Following two expeditions conducted by a team of Swiss, German, and Japanese geologists, ETH Zurich Professor of Sediment Dynamics Michael Strasser reports astounding findings on the aftermath of the 2011 Tohoku earthquake. Thorough analyses of pore water samples and extensive seabed mapping showed that the earthquake, which scored a 9 on the Richter Scale and induced a devastating tsunami, caused a 2-3 kilometer shift of the tectonic plate boundary off the coast of Japan. The results of their study are profound; a process which would normally have taken centuries or millennia has been shown to occur in a matter of minutes.
http://swissinnovation.org/news/web/2013/06-130805-7f

### World Food Life Cycle Assessment Database

(news.admin.ch, August 08, 2013)

Co-founders Agroscope and Quantis recently launched their World Food Life Cycle Assessment Database (WFLDB) project aimed at quantifying the environmental impacts of food production. Bringing together experts from all stakeholders of the food supply chain, the WFLDB will publish over 200 high-quality datasets on the production schemes, transformations, and storage and transport processes of various agricultural crops and animal products. Modelling methods that can be used in decision-making and by the general public will also be made available. Academics, environmental authorities, and consultancies are expected to take advantage of the WFLDB in trying to optimize food production, improve consumer information, and promote sustainable, cost-effective practices. The project is scheduled for completion in 2015 and has received funding from the Swiss Federal Office for the Environment, as well as important players in the food industry such as Nestlé, Kraft, Mars and Monsanto.
http://swissinnovation.org/news/web/2013/06-130808-9a

### New Airgel Catalyst for Low-Cost Fuel Cells

(PSI, August 08, 2013)

Thanks to a new airgel catalyst, fuel cells could be more cost-effective with five times less platinum than usual applications. Fuel cells convert hydrogen to electricity and produce only water as a byproduct, which has the potential to provide a mobile sustainable future. The Paul Scherrer Institute researched and developed low-temperature polymer electrolyte fuel cells which have been tested in cars and buses. By monitoring the performance and durability of these fuel cells, results may increase several times by a new nanomaterial which includes simultaneous reduction of material costs. With a three-dimensional airgel composed of a platinum-palladium alloy, the researchers used catalytic activity for the oxygen reduction at the positive electrode of a hydrogen fuel cell - in comparison to commercially available catalysts of platinum on carbon support - an increase of five times.
http://swissinnovation.org/news/web/2013/06-130808-65

### Aquaponics: Eco-Friendly Symbiosis Between Fish and Vegetables

(startupticker, August 09, 2013)

Urban Farmers, a startup from Basel, develops Aquaponics systems, linking fish farming and the cultivation of vegetables in an eco-friendly fashion: The fishes' excrements are used as fertilizer for the plants, which in turn clean the water which goes back to the fish tanks - a closed cycle which only uses little fresh water. 'With one pound of fish feed we can produce one pound of fish and five pounds of vegetables', says Mark Durno. Durno is responsible for the 250-square-meter pilot facility that Urban Farmers opened recently on a rooftop in the middle of an industrial neighborhood in Basel. The pilot farm's products are available at a supermarket close-by and in several restaurants in Basel.
http://swissinnovation.org/news/web/2013/06-130809-d0

### Pink Noise in Streams Redefines Trends in Water

(ETH Zurich, August 12, 2013)

Researchers from ETH Zurich and the British research institute CEH have discovered that chemical levels in streams fluctuate with a pattern that makes their future behaviour difficult to predict. When the research analyzed the variability of the levels of 45 chemicals in stream water, they discovered an unusual relationship between signal strength (amplitude) and the cycle length of the fluctuations. The signal amplitude of all 45 compounds grew larger the longer the cycle length (the lower the frequency). They recognized that in stream chemistry, amplitude increases with decreasing frequency in a particular way which mathematicians call “pink noise” or "flicker noise". The study suggests that researchers need a new way of thinking about trends in water quality, as past trends cannot easily be extrapolated to the future.
http://swissinnovation.org/news/web/2013/06-130812-f6

### Higher Yield of Cassava Crops with less Fertilizer

(University of Lausanne, August 13, 2013)

At the University of Lausanne, Prof. Ian Sanders and his team at the Department of Ecology and Evolution have developed a very promising approach to significantly increase the productivity of crops such as cassava. The secret lies in the use of a fungus, called "mycorrhizal", which establishes a symbiosis with plant roots, helping to extract essential soil nutrients. Until recently, these fungi were difficult to produce on a large scale, before being concentrated in small volumes for practical use in the field. This problem has now been solved. The researchers from Lausanne have teamed up with the National University of Colombia. Together, they were able to demonstrate that the symbiosis with the fungus improves cassava production by 20% while requiring only half the amount fertilizer.
http://swissinnovation.org/news/web/2013/06-130813-f5

### Older Male Nightingales Trill Better

(University of Basel, August 13, 2013)

Older male nightingales perform faster and more demanding trills than their younger rivals. These findings were published by researchers at the University of Basel and the Netherlands Institute of Ecology in the online edition of «Journal of Avian Biology». With up to 100 trill elements a second, nightingales belong to the fastest singers. Nightingales are famous for their large song repertoire: Each male can perform around 200 different song types. The scientists found out that older male nightingales perform faster trills with a broader frequency range than younger males. Based on the trills, females could therefore assess the age of the male singer and mate preferably with older ones. This behavior makes sense for female birds because older males are often more successful in reproduction.
http://swissinnovation.org/news/web/2013/06-130813-b1

### Climate Extremes Disrupt Carbon Cycle

(20min.ch, August 15, 2013)

A team of researchers including those from the Swiss Federal Institute of Forest, Snow, and Landscape Research, the University of Bern's Oeschger Center for Climate Change, and the ETH Zurich reported the detrimental impact of droughts, storms, heat waves, and heavy rain on climate change. According to the team, as much as 11 billion tons of carbon dioxide per year remain unabsorbed by vegetation in climates with weather extremes compared to those without. Additionally, droughts appear to be most devastating of all extreme weather cases as they make trees become more susceptible to pests and fire. Their analyses are supported by tree-ring data and were recently published in Nature.
http://swissinnovation.org/news/web/2013/06-130815-38

### Valuable Phosphate Fertilizer from Sewage Sludge with New Thermo-Chemical Process

(ETH Zurich, August 16, 2013)

Researchers from the Plant Nutrition Group at ETH Zurich have developed a new thermo-chemical process using sewage sludge ashes as an efficient and environmentally friendly phosphate fertilizer. Using sewage sludge as a fertilizer allows plant nutrients to be recycled back into the agricultural system making it a completely sustainable process. Within the scope of the Phoskraft, researchers from the Plant Nutrition Group at ETH Zurich have been investigating phosphate fertilizer efficiency, heavy-metal removal and bioavailability and the economy of a sewage sludge ash based fertilizer. Phosphorous is a key nutrient in human, animal and plant life. "This finite resource must be cycled more efficiently," asserts Simone Nanzer, a lead researcher in the project. Nanzer's findings also uncovered that the thermo-chemical process could be economically cycled back into agriculture and remodeled into a valuable fertilizer, phosphorus availability to plants would only be good in acidic and neutral soil conditions.
http://swissinnovation.org/news/web/2013/06-130816-3e

### Increased Carbon Release from Old Permafrost

(ETH Zurich, August 19, 2013)

Using indicator molecules, a team of researchers headed by ETH Zurich found that carbon stored in the Arctic permafrost mobilizes within Eurasian river basins. Due to changing precipitation levels, these rivers are pushing more water into the seas than a few decades ago while transporting carbon from their basins. The main concern for scientists are the microbes or other organisms that live off organic matter and exhale CO2 which could cause carbon increases which take thousands of years to release back into the atmosphere in a substantial amount. Using carbon dating, the geo-scientists were able to measure age differences of up to 13,000 years between young and

old terrestrial components. Based on documented changes in river discharge, relationships of radiocarbon age of lignin tracer molecules, researchers calculate that the ratio of carbon from permafrost has increased by five per cent in the last twenty years. Masked by changes in other carbon sources, mobilization of the carbon from the once deep-frozen soils appears on-going.
http://swissinnovation.org/news/web/2013/06-130819-57

### Apes Learn to Swim

(swissinfo.ch, August 16, 2013)

Swiss researchers have made the first-ever videos of apes swimming and diving in a swimming pool. The chimpanzee named Cooper, and the orangutan named Suryia, were raised by humans in the United States. Researchers Renato and Nicole Bender have been studying early hominoid interactions with water. Their account of swimming and diving behavior in apes is published in the American Journal of Physical Anthropology. The article discusses the hypothesis that poor swimming ability in apes is a consequence of their adaptation to arboreal life in their early evolutionary history.
http://swissinnovation.org/news/web/2013/06-130816-fb

### Ecological Footprint: Switzerland Ranked 21st

(tagesanzeiger.ch, August 20, 2013)

According to a metric calculated by the Global Footprint Network in conjunction with Earth Overshoot Day (the day when the world population has exhausted a year's budget of natural resources), Switzerland's current consumption patterns would require 2.8 times the resources of Planet Earth to sustain the world population. The impact of residents, food production, and private mobility are the primary contributors to Switzerland's ranking. Qatar was ranked top amongst countries with the worst ecological footprint, requiring 6.6 Earths given its current consumption, followed by Kuwait and the United Arab Emirates.
http://swissinnovation.org/news/web/2013/06-130820-ae

### Largest Solar Power Plant in Switzerland

(tagesanzeiger.ch, August 20, 2013)

In Neuendorf in the canton of Solothurn, Swiss retailer Migros established Switzerland's largest solar power plant to date. On a total area of 32'000 square meters - the area of 120 tennis courts - over 20'000 solar panels have been installed. The plant will provide an estimated 4.84 billion watt hours of electricity which is enough to provide for approximately 1300 households. In their sustainability agenda 'Generation M', the retailer pledged to promote the deployment of renewable energies.
http://swissinnovation.org/news/web/2013/06-130820-5d

### Largest Fermentation Plant in Switzerland

(tagesanzeiger.ch, August 20, 2013)

The new Werdhölzli fermentation plant produces biogas out of the kitchen and yard waste of Zurich's households. Biogas is a CO2-neutral alternative to fossil gas. The plant also encompasses a facility where biogas and sewage gas can be processed to yield the same quality as petroleum gas. In total, the plant will feed 5.5 million cubic meters of biogas with an energy content of about 55 million kWh per year into Zurich's natural gas grid. This is enought energy to supply about 5'000 households with heat.
http://swissinnovation.org/news/web/2013/06-130820-a5

### Energy Transition Index Available Online

(WWF, August 26, 2013)

The Energy Transition Index aims to improve energy management. Updated annually, it incorporates transparent data on energy use, production and efficiency, showing how Switzerland's energy transition is progressing. The index was developed by environmental organizations in Switzerland (Greenpeace, Pro Natura, SES Swiss Energy Foundation, WWF and VCS Traffic Club), in cooperation with the independent consulting firm Ernst Basler und Partner. It indicates the current energy status (100 % meaning on target and 0 % no progress or worse). With seven themes and 17 indicators, the index covers: economic and social affairs, security of supply, climate protection, energy efficiency, nuclear phase-out, biodiversity and renewable energies. Switzerland scores 65% or more in these first three areas, but has made no progress on the next two, which offer huge opportunities.
http://swissinnovation.org/news/web/2013/06-130826-4a

### Smart Power for Refugee Camp

(EPFL, August 21, 2013)

Hamed Ziade, a Master's student at EPFL, has created a power consumption model for refugee camps. The model is the first step toward large-scale integration of renewable energy sources in the camps. Reliable electricity in the camps increases safety, enables people to study at night, and encourages productive livelihood work. Ziade worked in collaboration with the United Nations High Commissioner for Refugees (UNHCR), which provided access to data on energy needs in the camps. Using the data, he developed CAMPOW©, a tool that predicts electricity demand for every hour of the day. The "smart refugee camps" of the future could manage energy using renewable sources, consumption monitoring, and energy storage.
http://swissinnovation.org/news/web/2013/06-130821-6d

### Revolutionary Study on CO2-Influenced Methane Emissions

(University of Bern, August 26, 2013)

It was thought that over the last ice age, global methane concentrations were closely coupled to Northern Hemisphere temperatures. However, a revolutionary new study conducted by Professor Hubertus Fischer of the University of Bern in collaboration with scientists from the USA and Germany now indicates that evolving ecosystems caused by changes in CO2 concentrations played a large role in the methane cycle of the past 160,000 years. The international research team published their findings in Nature Geosciences after having collected data from ice cores and used new methods of isotopic analysis. Their work, according to Professor Fischer, underlines the importance of re-evaluating long-established assumptions as new analysis methods and scientific knowledge become available.
http://swissinnovation.org/news/web/2013/06-130826-f9

### ACQWA Report has Practical Applications to Improve Water Management

(University of Geneva, September 03, 2013)

The European project on Assessing Climate Impacts on the Quantity and Quality of Water (ACQWA) has published the findings of its five years of research on managing water resources and potential climate impacts in mountainous regions. ACQWA is one of the largest European projects coordinated by Switzerland as part of the EU's 7th Framework Programme for research and technological development. The project, coordinated by the University of Geneva, involves more than 100 researchers in 37 institutions in eight European countries plus Chile, Argentina and Kyrgyzstan. The researchers have assessed the impact of climate change in key sectors, both economic (e.g. hydropower, agriculture, tourism) and environmental (e.g. snow and glaciers, forests, natural disasters). Their recommendations could improve governance and the allocation of water resources by the European Commission.
http://swissinnovation.org/news/web/2013/06-130903-11

### 93% of all Drink Packaging Recycled

(Swiss Federal Office for the Environment, September 03, 2013)

Due to the recovery of drink packaging made of glass, PET and aluminum, energy and natural resources are being successfully saved. In 2012, 3 billion packaged drinks were sold in Switzerland made from all of these materials; that amounts to about one package per day per person. In comparison to years before, there is a strong increase in the amount of aluminum cans being sold ( 11%). Conversely, there is a strong decrease in the use of reusable glass bottles (-14%). The biggest challenge to face is littering; 17% of littered garbage is due to drink packaging, the annual cleaning cost for which is CHF 50 million. Because of this, Parliament is looking to instate a littering fine. Another potential action would be a mandatory deposit system; however, Parliament is hesitant to do so because of the exorbitant costs that establishing a return system would create (about CHF 290m).
http://swissinnovation.org/news/web/2013/06-130903-18

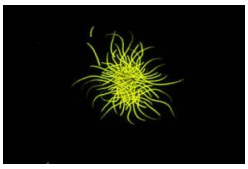
### Limited Uranium Supply

(ETH Zurich, September 10, 2013)

ETH Physicist Michael Dittmar claims that Uranium, the fuel of the world's power plants, is becoming rapidly scarce and expensive. One hears often of "Peak Oil," that the extraction of ground oil had reached a maximum; however, one rarely hears of "Peak Uranium." According to Dittmar's calculations, the worldwide breakdown of Uranium ore in existing (and projected) plants will reach its maximum potential of 58'000 tons per year in 2015. After that, the ore mining will only decrease (to 41'000 maximum in 2030). A Uranium crisis could mean some countries will not receive any supply at all; such an event could mean a complete collapse of electrical supply. Even if the world does adjust its consumption of uranium, a crisis will likely be unavoidable.
http://swissinnovation.org/news/web/2013/06-130910-1e

### Earth's Axial Precession Controls Nitrogen Fixation

(sciencedaily.com, September 13, 2013)



The cyclic wobble of Earth on its axis, called axial precession, controls the production of fixed nitrogen, a nutrient essential to the health of the ocean, according to a new study by researchers from ETH Zurich and Princeton University. Precession leads to a regular upwelling of deep water in the equatorial Atlantic Ocean roughly every 23,000 years. The upwelling in turn brings nitrogen-poor water to the surface where blue-green algae convert nitrogen drawn from the air into a form that is biologically usable. The finding that nitrogen fixation is determined by precession-driven upwelling appears to indicate that the ocean biosphere can recover from even the most dramatic ecological changes
http://swissinnovation.org/news/web/2013/06-130913-80

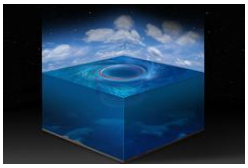
### Radar to Reduce Bird Mortality From Wind Turbines

(swissinfo.ch, September 19, 2013)

Radar has long been used to study bird migration patterns. Now, a special radar called BirdScan may help to resolve the conflict between birds and the expanding industry of wind power. The BirdScan radar continuously scans the sky above a wind farm and, when the density of birds goes above a certain threshold, the turbines are shut down. Bird mortality by collision with the turbines is greatly reduced, while limiting the time periods that the turbines are not operating. The planned wind farm in Grenchen (canton Solothurn), expected to open in 2015, will be the first to use the BirdScan system commercially.
http://swissinnovation.org/news/web/2013/06-130919-54

### Ocean Eddies Mathematically Equivalent to Black Holes

(ETH Zurich, September 23, 2013)



Huge ocean eddies of over 150 kilometres in diameter rotate and drift across the ocean and influence the world's climate considerably. Researchers from ETH Zurich and the University of Miami have found that some of the largest ocean eddies on Earth are mathematically equivalent to the mysterious black holes of space: Nothing that comes too close can escape, but at a critical distance, objects form a circular orbit. These black-hole-type ocean eddies are stable and function in the same way as a transportation vehicle - for micro-organisms such as plankton or foreign bodies like plastic waste or oil, but also for water with a heat and salt content that can differ from the surrounding water. These results are expected to help in resolving a number of oceanic puzzles, ranging from climate-related questions to the spread of environmental pollution patterns.
http://swissinnovation.org/news/web/2013/06-130923-07

### Warm Summers Coincide with Less Frequent Floods in the Alpine Region

(SNSF, September 26, 2013)

Flooding represents a major natural hazard facing the people and infrastructures of the Alpine region. Researchers from Eawag, the University of Bern and ETH Zurich have studied the full history of flooding in the northern Alps over the past 2,500 years. Combining this data with the summer temperature curve for central Europe revealed a positive correlation between the periods with most frequent flooding and cool summers. Based on current knowledge, the researchers believe that with the ongoing climate change, the frequency of flooding can be expected to decline in the central Alpine region. However, the study does not enable them to draw conclusions as to the intensity of individual floods.
http://swissinnovation.org/news/web/2013/06-130926-b3

### Sodium-Ion Batteries for the Future

(PSI, September 26, 2013)

Though lithium-ion batteries are very efficient and currently power our laptops, mobile phones, and cameras, they are expensive and harmful to the environment. Therefore, researchers at the Paul Scherrer Institute have been investigating the ability of sodium to substitute lithium since they have similar chemical properties. Through studying the movement of sodium ions during the charging and discharging of these batteries, they found that the paths along which the ions move are connected to small changes in the atomic structure of their battery material. Using this knowledge of sodium-ion dynamics, the researchers hope to optimize their material's properties for the production of future improved batteries.
http://swissinnovation.org/news/web/2013/06-130926-31

## 7. Engineering / Robotics / Space

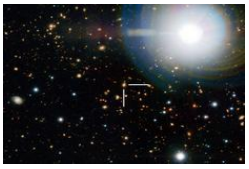
### Satellites for Zero-Gravity Research: SpacePharma

(swissinfo.ch, September 30, 2013)

Swiss start-up SpacePharma has signed a contract with Swiss Space Systems (S3) to launch 28 satellites for research in zero-gravity environments. They will serve as laboratory environments, offering companies and researchers the opportunity to conduct experiments in zero gravity. “Until now it was complicated to go into a real micro-gravity environment – the only real option was to use the International Space Station, which is related to problems like cost and having to wait about three years to conduct an experiment there. Because space is becoming more and more public, especially through initiatives like S3, this opens a completely new field of opportunities”, explains Martin Aebi, general manager of SpacePharma.
http://swissinnovation.org/news/web/2013/08-130930-bf

### Larger Galaxies Had More Time to Grow

(ETH Zurich, August 02, 2013)



Disproving the long-standing hypothesis that the increase in the average size of quenched galaxies (galaxies in which stars no longer form) is not primarily due to galaxies merging, astrophysicist Marcella Carollo and her group at the ETH Zurich believe the increase can be explained by a much simpler phenomenon: since galaxies continue to grow until they switch off, those which switch off later would have had more time to grow. Hence, they are larger, which explains why quenched galaxies are now three times larger on average compared to those formed ten billion years ago. Their study of over 10,000 quenched galaxies used data from the Hubble Space Telescope and enabled them to compare galaxies from all epochs using just one benchmark instead of combining different datasets. This provided them with the largest coherent picture possible.
http://swissinnovation.org/news/web/2013/07-130802-c3

### Eye Surgeon Micro Robot

(swissnex Boston, August 02, 2013)

The Multi-Scale Robotics Lab (MSRL) at the ETH Zurich has developed a microrobot capable of navigating through the eye of a rabbit, making the prospect of minimally-invasive surgery performed by robots in humans (pending clinical trials) closer to reality. Four times the width of a human hair, these microrobots are wirelessly guided using a magnetic system which can manipulate the robots’ movements in three dimensions. The MSRL anticipates that their technology, developed at the intersection of robotics, nanotechnology, and engineering, will have critical applications in the exploration of biological cell structures, investigation of protein folding, and drug delivery.
http://swissinnovation.org/news/web/2013/07-130802-be

### Swiss Smartwatch Launched

(slashgear.com, August 15, 2013)

The new Crossbow watch by Swiss company Hyetis combines traditional features such as a mechanical movement, titanium body, and partially analog display, with a collection of electronic devices including a 41-megapixel camera, various sensors, and several connectivity conduits. The camera can record video with HD audio using selective noise suppression. Possibly the first Swiss smartwatch, the Crossbow can be paired with smartphones, and Hyetis promises to offer software development kit bundles for app developers. The “Early Bird” edition of the Crossbow can be pre-ordered for $1200. According to the Hyetis website, the watch has been designed, engineered, and made in Switzerland.
http://swissinnovation.org/news/web/2013/07-130815-b4

### Foosball Robot Beats Humans

(EPFL, August 26, 2013)

Masters students from the Automatic Control Laboratory (LA) have created a robot that can play foosball given the robot surpasses any player based upon accuracy and speed. The robot depends on two computers: one to control the mechanical movement of the arm and the other to provide information about the position of the ball, in real time. Although the robot cannot perform complex moves, its kicking power is quite formidable. Christophe Salzmann quotes, “This is a very good exercise for students. They control the materials, assembled the robot, program it and develop the algorithms. The work is comparable to any industrial project.” Potentially, the computer can simultaneously analyze many more parameters than a human as well as process information faster. It can detect the location of the players and the exact trajectory of the ball after it ricocheted off the edge.
http://swissinnovation.org/news/web/2013/07-130826-1e

### Intelligent Cooking Sensor Waits for Commercialization

(ETH Zurich, August 22, 2013)

Two Master students from ETH Zurich have developed an intelligent cooking lid with an integrated digital temperature sensor which warns users of impending big or small kitchen disasters. The lid is autonomous, requiring no battery or external voltage source, making a warning if the water is close to boiling – in a notification appearing on your mobile phone. Energy is obtained from the hot water using a so-called thermoelectric generator, instead of being generated by a battery. Thin modules build up a voltage upon exposure based on a temperature difference between the top and bottom of the lid. Voltage from the thermoelectric sensors measuring the top and bottom lid surface temperatures then code and transmit acoustic signals. Marie Francine Lagadec and Kanika Dheman will no longer be promoting the device since they have finished their studies, however, they would love to pass on their project to other students hopefully bringing it to the marketplace.
http://swissinnovation.org/news/web/2013/07-130822-31

### Impact of Volcanic Ash on Air Travel

(University of Fribourg, August 27, 2013)

In 2010, the eruption of Eyjafjallajökull, a vulcano in Iceland, caused air traffic in Europe to be grounded for six days. Researchers at the University of Fribourg analysed samples of volcanic ash taken at different points in its journey from the volcano across Europe. They found that the two different forms of the ash particles – crystalline and glassy – behaved differently during transport. As the plume travelled through the air, the crystalline particles, which are more harmful to jet engines, fell out of the cloud first compared to even-sized glassy particles. Understanding the behaviour of these processes in the ash cloud will enable the authorities to fine tune their response to future volcanic eruptions and help to mitigate the impact of on air travel.
http://swissinnovation.org/news/web/2013/07-130827-23

### Ultra-Efficient 80 Miles-per-gallon Engine

(MIT Technology Review, August 28, 2013)

Researchers at ETH Zurich have developed an ultra-efficient new engine that runs on a combination of natural gas and diesel. When combined with a battery and electric motor to make a hybrid vehicle, it could allow a car to get the equivalent of 80 miles per gallon, the researchers say. That's far better than the 50 miles per gallon you can expect from the most efficient existing hybrids such as the Toyota Prius. The only catch would be finding both natural gas and diesel for refueling. In Europe, the standards require cars to achieve the equivalent of 55 miles per gallon, on average, by 2020. In the U.S., vehicle fleets need to hit that target by 2025.
http://swissinnovation.org/news/web/2013/07-130828-0f

### CleanSpace One Satellite Project Makes Way for Space

(EPFL, September 10, 2013)

EPFL has entered into a partnership with Swiss Space Systems (S3) to implement the CleanSpace One satellite, which will clean up the thousands of bits of jettisoned rocket and satellite debris which orbit the Earth at speeds of more than 28,000 km/h. (S3) will invest CHF 15 million into the project in order to put the satellite into orbit. This three-phase process will create more space, less debris while cutting launch costs by a factor of four. As part of a partnership with the European Space Agency, researchers are developing many key technologies targeting space debris – propulsion, navigation and reconnaissance systems and, above all, a device that can anchor itself to pieces of debris.
http://swissinnovation.org/news/web/2013/07-130910-ae

### 3D Printing on Demand

(20min.ch, September 25, 2013)

3D printing is all the rage, and now it's becoming available for everyone: At two locations, the 'New Copy Store' lets you print anything you want - all you need is a file containing the design of the desired object. Up to a maximum size of 15x15x28 centimeters, anything is possible: "Our 3D prints are very useful for architects and engineers who can create models of the objects they design", says Albert Faessler who's responsible for the 3D printer. But the technology can also be used to make decorative items or small objects like functional whistles, lemon squeezers or even a padlock, as journalists of Swiss newspaper 20 minutes demonstrate in their article.
http://swissinnovation.org/news/web/2013/07-130925-1d

## 8. Physics / Chemistry / Math

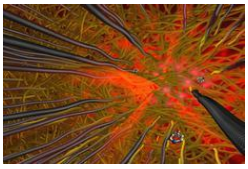
### Magnetization Controlled at Picosecond Intervals with Terahertz Laser

(PSI, August 11, 2013)

Quickly and precisely controlling the magnetism of a material is important for the magnetic storage of information, such as on a hard drive. Scientists at the Paul Scherrer Institute have demonstrated picosecond control of the magnetic moments of a material using short pulses from a terahertz laser. The magnetic field of the laser changes the magnetism of the material, but the laser does not heat up the material at this frequency. Special organic crystals are used to reduce the frequency of the light to the needed value. The laser is also phase stable, which means the shape of the light pulse can be controlled precisely, another important property. Further development in laser power is needed for full control.
http://swissinnovation.org/news/web/2013/08-130811-97

### High-Sensitivity Spectroscopy

(ETH Zurich, August 29, 2013)



Vibrational spectroscopy is used to detect and identify molecules in tiny quantities. The sensor works by shining light on a sample and then measuring the frequency output pattern. However, to measure even smaller quantities, the output needs to be strongly amplified. Researchers at ETH Zurich, together with US colleagues, achieved this by creating a carbon nanotube substrate coated in hafnium oxide and gold. The result is an inexpensive modification to the original spectroscopy sensor that achieves many orders of magnitude improvement in detection capability. The scientists want to commercialize the technology and are seeking appropriate partners.
http://swissinnovation.org/news/web/2013/08-130829-b3

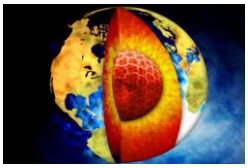
### New Concept to Reduce Nuclear Waste

(PSI, September 05, 2013)

The idea of producing fuel for nuclear power stations in form of a package of spheres instead of today's customary pellets was already born back in the 1960s. However, the spherical fuel was never implemented as the fast reactors for which it was conceived were never built at a large scale. The Paul Scherrer Institute (PSI) has also been involved in the research on spherical fuel in the past. Now several projects partly funded by the EU are currently underway at the PSI again to refine the production of fuel spheres further. This form of fuel could either be used in special plants to reduce waste or in fast generation IV reactors, which in a closed cycle also produce less long-lived waste.
http://swissinnovation.org/news/web/2013/08-130905-b6

### Swiss Supercomputing to Uncover the Mystery of Earth Core's Spin

(redorbit.com, September 17, 2013)



For the last 300 years at least, we have been questioning what direction the center of the earth spins. Researchers from the University of Leeds used the giant supercomputer Monte Rosa at the Swiss National Supercomputing Centre in Lugano to run the model of the Earth's core to answer that question. According to their study the Earth's inner core – made of solid iron – "superrotates" in eastward directions. This means it spins faster than the rest of the planet. Made of mostly molten iron, the outer core spins westward at a slower pace. The researchers hope that their findings will enable scientists to interpret the dynamics of the core of the Earth, the source of our planet's magnetic field.
http://swissinnovation.org/news/web/2013/08-130917-c6

### Quick Test for Fake Perfumes

(EPFL, September 25, 2013)

Counterfeit perfumes are costing the cosmetic industry and consumers significant amounts of money, but identifying imitation perfumes can be a difficult and time-consuming task. Scientists at EPFL have designed an innovative method called Electrostatic Spray Ionization that can analyze and identify counterfeit perfumes faster than conventional methods. Because there is no need for time-consuming preparations of the samples before testing, the new method provides a rapid, high-throughput means of fingerprinting and identifying per-

fumes. The EPFL team sucessfully tested their method on different commercial perfumes from manufacturers including Givenchy, Hermes and D&G.
http://swissinnovation.org/news/web/2013/08-130925-05

### First Manipulation and Control of Nuclear Spin Noise

(University of Basel, August 26, 2013)

Nuclear magnetic resonance (NMR) is a method to measure elements using their magnetic nucleus. The nuclei are polarized using a magnetic field and then perturbed using electromagnetic pulses. The result is a signature that can be measured to determine certain properties of the elements. While this technique works well in many applications, it is limited in nanometer-scale measurements by the natural noise of the nuclear spin. Researchers at the University of Basel, together with Dutch colleagues, have created a method to measure and control this noise so that accurate measurements can be made on tiny objects. This has implications in a variety of fields, including quantum computing, an important future technology.
http://swissinnovation.org/news/web/2013/08-130826-f2

## 9. Architecture / Design

### Ultra High Precision Brick Wall Building Robot

(swiss-architects, August 21, 2013)

While technology has revolutionized many aspects of our daily lives in the past decades, construction sites still look pretty much the same as they always have. Introducing robotics to this field, brick manufacturer Keller AG Ziegelei and architects from ETH Zurich have developed 'ROBmade', a robot that constructs customized brick walls with ultra high precision. This is offering architects an astonishing flexibility: The bricks can be rotated and positioned freely, allowing for the construction of unprecedented structures. One example for that is the facade of the Ofenhalle in Pfungen near Zurich, featuring an intricate diamond-shaped netting of bricks.
http://swissinnovation.org/news/web/2013/09-130821-46

### 'Recreate Textiles: Think Forward' - International Textile Innovation Award

(swiss-architects, September 30, 2013)

With the international innovation award 'Recreate Textiles: Think Forward', Swiss Textile Manufacturer 'Création Baumann' seeks creative and ecological as well as economically meaningful solutions for using discontinued lines in a second life cycle. The five best projects out of over 50 group or individual works from national and international students in Germany, Switzerland, the Czech Republic and Israel were awarded. Among them were Anja Hungerkamp's project entitled 'Fold', that exploits the idea of origami, using hardened textiles that could be folded and used in many different ways. Stefanie Powell's project 'Hot Dots' combines several layers of fabric scraps with plastic to make a beautiful hybrid material.
http://swissinnovation.org/news/web/2013/09-130930-cf

### Entirely 3D-Printed Room

(mashable.com, September 30, 2013)

Two Switzerland-based architects created an entirely 3D-printed 16-square-meter room. Titled “Digital Grotesque,” the room is made up of 3D-printed sandstone in two large halves that come together and form a space for viewers to explore its intricate design details. The work utilizes customized algorithms, starting with a simple form that is repeatedly divided into smaller parts through computational design. When the division rates are tweaked, the geometry changes; in the end, the 'Digital Grotesque' algorithm creates a form with 260 million individual parts. "By using computational design and additive manufacturing, we can design architecture with a complexity and richness that would be impossible to draw by hand", says Michael Hansmeyer, one of the designers.
http://swissinnovation.org/news/web/2013/09-130930-3c

### Ultra-High Performance Concrete

(EPFL, September 04, 2013)

A lighthouse turret off the coast of Lorient, Brittany has been fitted with technology developed at EPFL for bridges. This new technology will test an application of Ultra-High Performance Concrete (UHPC). Ultra-High Performance

Fiber-Reinforced Concrete is a concoction of a mixture of cementing materials and steel fibers. Based on chemical analysis and particle size, this concrete is exceptionally compact and waterproof. The fibers used in this technology give a deformation capacity comparable to steel, without any weight or corrosion sensitivity. Even when deployed in a thin layer, its impermeability still repels against water and salts erosion.
http://swissinnovation.org/news/web/2013/09-130904-a4

## 10. Economy, Social Sciences & Humanities

### Secret Network of Familiar Strangers

(ETH Zurich, August 06, 2013)

Every commuter knows them: strangers with familiar faces that accompany you day in day out. You know each other without really knowing each other. Perhaps, you might even nod at one another in the morning but don't even know each other's name. Now, researchers paint a comprehensive picture of this secret network of familiar strangers. Via two or three familiar strangers, every bus-user is connected to everyone else. This data is also interesting from a medical perspective as trains and buses actually constitute places with an increased risk of infection. The secret social network that the researchers describe in the latest issue of the journal PNAS reveals how quickly infections could reach over half the population of Singapore via this route.
http://swissinnovation.org/news/web/2013/10-130806-e6

### New Insurance Models for the Poor

(University of Zurich, August 06, 2013)

In developing countries, only about 5-10 percent of people have insurance, making illnesses, accidents and crop shortfalls major poverty risks. Index-based microinsurance is a model to deal with this deficit: By correlating weather data from the past with crop failures or losses of livestock, parameters are defined to predict when losses are likely to happen in the future. For example, a minimal amount of rain can be defined, when it's undercut, the insurance pays predefined benefits. The advantage of such a system is that insurance benefit decisions are based on objective data, omitting costly damage assessments on a case-by-case basis. Leigh Johnson, postdoctoral student at the University of Zurich is researching microinsurance against risk in agriculture in Kenia.
http://swissinnovation.org/news/web/2013/10-130806-54

### Free Online Course Helps Parents Motivate Children with ADD/ADHD

(University of Fribourg, August 19, 2013)

Children with a disorder of attention deficit (ADD) with or without hyperactivity face considerable learning difficulties. Parents who help them with homework are also often under strain. A new online course, developed by psychologists at the University of Fribourg, aims to teach parents how to motivate their children and guide them towards greater autonomy. At school, students with ADD or ADHD tend to be disruptive and easily distracted. Studies have shown that such behaviors undermine their academic success. The "Erfolgreich lernen mit ADS und ADHS" course, currently only available in German, comprises 12 lessons given over a period of 24 weeks. It focuses specifically on homework and learning. The course is free of charge and its online format offers parents maximum flexibility.
http://swissinnovation.org/news/web/2013/10-130819-81

### Swissness Is Good for Business

(University of St.Gallen, September 01, 2013)

University of St. Gallen's Institute of Marketing recently surveyed 4,041 people in 14 countries about the Swiss brand. While many Swiss are convinced that their country's image has deteriorated in recent years, the survey showed that internationally, the opposite is true: Switzerland's image is notably better than two years ago, especially in Brazil, India and China. Switzerland is perceived as a reliable and trustworthy country with abundant natural beauty and a high quality of life. In a comparison between countries, Switzerland came out ahead of Germany, Japan and the US. Swissness appealed to respondents on intellectual and emotional levels. The study also establishes that for companies, Swissness pays off financially: it offers the potential to realize higher product prices, especially in countries like China, Japan and India.
http://swissinnovation.org/news/web/2013/10-130901-e9

### Controlling Export Risks

(HTW Chur, August 27, 2013)

The risks for Swiss companies in the export business has increased significantly. Especially SMEs do not implement the necessary safeguards to protect themselves from these risks. A study conducted under the leadership of the College for Technology and Economy HTW Chur has investigated how successful SME control for export risks. They have now published guidelines for SME to manage the export risks.
http://swissinnovation.org/news/web/2013/10-130827-5f

### 17% of Youth Overweight or Obese

(Gesundheitsfoerderung Schweiz, September 02, 2013)

The rate of overweight or obese children and adolescents in Switzerland remained constant albeit high at 17%, while the older a child is, the more likely he is to be overweight, with 12%, 18%, and 21% of elementary, middle, and high schoolers falling into this category respectively. These are among some of the results recently published by Health Promotion Switzerland in a comprehensive report of body weight distribution in children and adolescents. The foundation evaluated data collected by the school medical services of nine cantons and two cities in Switzerland between 2005 and 2013, and will use them to continue developing preventive measures to fight obesity and improve health.
http://swissinnovation.org/news/web/2013/10-130902-5c

### Orangutans Use Planning Abilities through Calling Recogniton

(University of Zurich, September 11, 2013)

University of Zurich Anthropologists have discovered that orangutans, both captive and wild-living orangutans, make use of their planning ability.“To optimize the effect of these calls, it thus would make sense for the male to call in the direction of his future whereabouts, if he already knew about them”, explains Carel van Schaik. “We then actually observed that the males traveled for several hours in approximately the same direction as they had called.” Essentially, orangutans plan their route up to a day ahead: In the morning, the other orangutans reacted correctly to the long call of the previous evening, even if no new long call was emitted. This research shows another characteristic that brings Homo sapiens and Primates even closer.
http://swissinnovation.org/news/web/2013/10-130911-81

### Tutoring Effectiveness Reconsidered due to Surprising Results

(SNF, September 12, 2013)

A study funded by the Swiss National Science Foundation (SNSF) has shown that roughly one sixth of school children in German-speaking Switzerland receive private tutoring. Most seek assistance with mathematics, but of those who receive tutoring, they rarely attain any improvements with their marks. A team led by educational scientist Hans-Ulrich Grunder from the University of Basel, and, the School for Teacher, Education FHNW, conducted a survey of more than 10,000 pupils in classes 5 through 9 at various schools in German-speaking Switzerland. On the basis of the study findings, Hans-Ulrich Grunder recommends that the status of private tuition be reconsidered due to non-substantive results in private tutoring.
http://swissinnovation.org/news/web/2013/10-130912-bc

## 11. Technology Transfer / IPR / Patents

### Swiss Top 100 Startups Awards

(startupticker.ch, September 19, 2013)

The winners of the Top 100 Swiss Startups 2013 were officially announced yesterday at an event organised by IFJ and SECA. More than 330 founders, investors and start-up supporters attended the event at the Härterei in Zurich. Nineteen companies presented themselves: the top 10 and nine interesting newcomers. The full list of all Top 100 companies is available at startup.ch. The event, running for the third consecutive year, is an important get-together of the Swiss start-up scene. Three of the top 10 companies have won the WA de Vigier Foundation Startup Award, nine have been supported by venture kick and benefited from CTI Startup’s coaching programme. 49 of the 100 startups were part of the venture leaders program in Boston.
http://swissinnovation.org/news/web/2013/11-130919-3a

### Innovation and Entrepreneurship Lab for Life Sciences at ETH Zurich

(swissnex Boston, August 28, 2013)


ETH Zurich's two ieLabs give young scientists the possibility to develop ideas from their research into prototypes on the way to a full-fledged industrial product. The new ieLab Life Sciences facility on the Hönggerberg Campus features 30 lab and 12 office spaces for life science ventures, including a biosafety level 2 laboratory for working with microorganisms. For Roland Siegwart, ETH's Vice President Research and Corporate Relations the concept of the ieLab is already a success: "Many of the teams are successful in entrepreneur competitions and also secure part of their funding that way."
http://swissinnovation.org/news/web/2013/11-130828-c5

### Positive Signs for European Venture Capital

(startupticker, August 05, 2013)

The latest data regarding European venture capital funds shows an increase in activity, a positive sign. Cumulative investment is beating the numbers from last year, and merger & acquisition activity is reaching new highs as well. Also, several major funds are growing their capital. The main area of improvement, in comparison to the US, is the number of follow-on rounds of funding, where Europe is still lagging, possibly due to tax incentive structures or cultural differences.
http://swissinnovation.org/news/web/2013/11-130805-0f

### US Tech Giants Screen Swiss Startup Scene for Acquisitions

(20min.ch, August 05, 2013)

Tech giants are keen to catch the new megatrends - and to swiftly integrate them into their portfolio by acquiring startups with the right knowledge. Yahoo is at the top of the list, with the 17 startups it has acquired since the beginning of 2013, spending for example over a billion dollar on the microblogging platform tumblr. Facebook with 6, Google, Twitter and Amazon with 5 and Apple with 3 acquisitions this year are strong competitors for new technologies. Swiss startups are also on the radar, says Jean-Pierre Vuilleumier of CTI Invest: "Google & Co. are regularly checking out Swiss startups." As an example, he mentions Getyourguide, the world's largest online platform for booking tours and activities: "They could have been acquired several times."
http://swissinnovation.org/news/web/2013/11-130805-d0

### EU Study: Success Factors for Startups

(NZZ, August 08, 2013)

A study conducted by KMU Forschung Austria (SME research Austria) for the EU Comission found that more than 50 factors decide if a scientific breakthrough can successfully be adapted into a product or service afterwards. The study investigated 40 companies supported by EU grants. Most products took more time than initially planned before they reached the market. A main reason for that is the integration of new insights from research. Furthermore, companies often underestimated the need for an organisational development. A major factor for a successful commercialization was the early integration of potential customers who are willing to adopt the technology before the product is completely developed. The timing of the products' release date was also relevant for the success. However, the fastest companies were not the most successful ones.
http://swissinnovation.org/news/web/2013/11-130808-64

### Swiss Investment Fund for Startups

(NZZ, August 08, 2013)

Switzerland is known for its leading education and research system, but it is lacking in good sources of venture capital for startups. A finance industry group and the Commission for Technology and Innovation want to change this through a Swiss Investment Fund, which would provide early stage capital in the range of two to five million Swiss Francs to Swiss startups. The fund would invest in a range of industries, but would not be the sole source of capital for any startup. Instead, it would provide additional support to venture capital funds to shorten the timeline startups face to acquire capital.
http://swissinnovation.org/news/web/2013/11-130808-b2

### Success Factors for Internationalization of Startups and SMEs

(startupticker.ch, August 20, 2013)

The School of Management Fribourg has released a report on the factors that lead to successful internationalization of small- and medium-sized Swiss businesses. The top factor is the international experience of a company's founders or key personnel, either through work experience abroad or work in an international setting. Also, strong

networks help companies increase their exports, active risk management is widespread among successful companies, and companies that are global right from the start tend to be more successful than others. Startups that plan to internationalize can draw key lessons from this report.
http://swissinnovation.org/news/web/2013/11-130820-2d

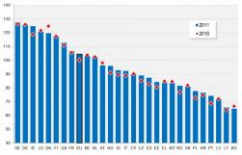
### Startup Competition and Support Program by FHNW

(FHNW, August 26, 2013)

Every year, around 40'000 companies are founded in Switzerland. To support people willing to start their own company, the University of Applied Sciences and Arts Northwestern Switzerland (FHNW) launches 'SwissUpStart', a competition for young entrepreneurs and their business ideas. On top of a CHF 20'000 prize, the successful companies get access to a wide range of services: Technical and business coaching, networking events and education and training courses. The program is located at the new FHNW campus in Brugg/Windisch and is supported by partners including UBS, Technopark Aargau and the Hightech Centre Aargau.
http://swissinnovation.org/news/web/2013/11-130826-c6

### Switzerland #5 in Innovation Output Ranking

(European Comission, September 15, 2013)



The European Commission recently launched a new innovation indicator specifically targeting the results of innovation. The objective of the so-called “Indicator of Innovation Output” is to measure how ideas from innovative sectors can reach the market, create better jobs and increase competitiveness. Switzerland holds 5th place in the ranking on the basis of this new indicator. The country is among the top performers but is preceded by Japan, Sweden, Germany and Ireland. Switzerland has moved down the table slightly compared to 2011. This new indicator is based on four components from the Innovation Union Scoreboard (IUS). These include the competitiveness of knowledge-intensive services, one of the few indicators for which Switzerland scores considerable worse than the average for the European Union.
http://swissinnovation.org/news/web/2013/11-130915-e2

### Koemei in Google's Footsteps

(venturelab, September 17, 2013)

The World Economic Forum announced its latest selection of Technology Pioneers, consisting of 36 of the world’s most innovative technology start-ups. These companies are being recognized for their potential to transform the future of business and society. One of the Technology Pioneers 2014 is Koemei, a startup based in IdeArk in Martigny. Koemei developed a speach recognition software that transcribes speech from multiple speakers to a text. Temitope Ola, Koemei CEO, participated in 2011 to the venture leaders programme in Boston (USA) as the captain of the swiss national startup team. In the previous years, famous startups such as Google (2001), Mozilla Corporation (2007), Wikimedia (2008), Twitter (2010), Dropbox (2012) have been selected by the World Economic Forum.
http://swissinnovation.org/news/web/2013/11-130917-e1

## 12. General Interest

### Miniature Me with 3D Printer

(20min.ch, August 20, 2013)

A Swiss company is in the business of cloning people: Equipped with 3D scanner and printer, the Swiss company PocketSizeMe creates plastic replicates of real humans. The figurines are sized between 10 and 20 cm and cost between CHF 400 and 540.
http://swissinnovation.org/news/web/2013/12-130820-61

### Swiss Averages in Traffic and Travel Reach Surprising Results

(swissinfo.ch, August 20, 2013)

On average, Switzerland residents spend one-and-a-half hours in traffic every day, traveling about 36.7 kilometers, quoted by the Federal Statistics Office, making it a five per cent increase compared to year 2000. Every year, Swiss residents travel almost 20,500 kilometers. That's the equivalent of traveling halfway around the earth by car. Additionally, residents travel about 6,900 kilometers abroad, according to Mobility and Transport 2013. Additionally, Switzerland, which has a population of eight million, had about 5.8 million cars registered at the end of 2012 which represents an increase of 71 per cent from 1980.
http://swissinnovation.org/news/web/2013/12-130820-81

### Prestigious Travel Award on Sustainability for Switzerland Tourism

(myswitzerland.com, September 02, 2013)

Condé Nast Traveler, highly respected in the travel industry, rewards travel companies for exceptional achievement in social and environmental responsibility. Condé Nast Traveler has chosen 14 top travel companies, from 174 applicants, to receive the World Savers Awards in 2013. Applications covered eight sectors – small hotel chains, large hotel chains, city hotels, small lodges and resorts, large lodges and resorts, tour operators, cruise lines, and destinations – assessed on: Education Programs, Environmental and Cultural Preservation, Health Initiatives, Poverty Relief, and Wildlife Conservation, by a panel of judges. Switzerland Tourism receives the award for Sustainable Destination/Developed Country for this cited reason: “The tech-savvy Swiss are balancing development and environmental responsibility.” Condé Nast Traveler considers its award winners powerful forces for sustainable, responsible, and eco-friendly travel.
http://swissinnovation.org/news/web/2013/12-130902-83

## 13. Calls for Grants/Awards

### Call: Swiss Government Excellence Scholarships for 2014-2015

(SERI, August 2013)

The Swiss Government, through the Federal commission for Scholarships for Foreign Students (FCS), awards various postgraduate scholarships to foreign scholars and researchers. The scholarships provide graduates from all fields with the opportunity to pursue doctoral or postdoctoral research in Switzerland at one of the public funded university or recognized institution. Please visit the program's website to find more information about the scholarships offered for your country of origin. Deadline: October 2013
http://swissinnovation.org/news/web/2013/13-130729-9e

### Call: Geneva Health Forum 2014 – "Global Health - Interconnected Challenges, Integrated Solutions"

(Geneva Health Forum, September 10, 2013)

Since 2006, the Geneva Health forum has been asking hard questions, inviting practical solutions, and hearing brave voices from all over the world. The forum aims to link policy and practice in global health. It convenes every 2 years, bringing together 1000+ people from more than 100 countries from a variety of sectors and backgrounds to debate the most pressing contemporary global health issues, giving a prominent voice to those at the frontlines of health. The fifth edition of this well-established conference is going to take place on April 15-17, 2014 in Geneva.
http://swissinnovation.org/news/web/2013/13-130910-54

### Call: Business Engineering Sustainable Energy Systems – First English Bachelor's Program in Switzerland

(Lucerne University of Applied Sciences and Arts, September 20, 2013)

The Lucerne University of Applied Science and Arts offers the first Bachelor's program in Switzerland that is taught entirely in English: the Bachelor of Science in in Business Engineering Sustainable Energy Systems. This affordable program is geared towards international and Swiss students who hold a high school degree and have a minimum of one year of work experience or participate in a 18-week technical training program at the University prior to entry. The program allows students to learn through real-life examples how innovative energy system solutions can be developed that make economic sense and offer society a sense of comfort, health, and safety. Application is open until April 2014.
http://swissinnovation.org/news/web/2013/13-130920-07

### Grants: “Return Grants” for Advanced Postdoc Fellows

(SNSF, September 24, 2013)

In order to boost the promotion of young scientists in Switzerland, the Swiss National Science Foundation (SNSF) has decided to introduce a "return grant". This means that in addition to a research stay abroad for 12 to 36 months, an Advanced Postdoc.Mobility fellowship will include the option to request a return phase of 3 to 12 months at a Swiss research institution. The next call for proposals for the Advanced Postdoc.Mobility scheme is planned for 1 November 2013 with the submission deadline on 1 February 2014.
http://swissinnovation.org/news/web/2013/13-130924-45

### Call: Geneva International Students' Program

(UNIGE, August 2013)

The Geneva International Students' Program is an English language study abroad semester at the University of Geneva that combines English modules with intensive French language study. Program dates: 17 February - 23 May, 2014; Deadline: October 15, 2013
http://swissinnovation.org/news/web/2013/13-130713-33

## Upcoming Science and Technology Related Events

**Swiss Inter- and Transdisciplinarity Day**
October 21, 2013
http://tinyurl.com/Swiss-Transdisciplinarity
Science
Hotel National in Berne

**CEO Day 2013**
October 23, 2013
www.ceoday.ch
Innovation / Entrepreneurship
Stade de Suisse, Berne

**Hackathon Zurich**
October 25, 2013
http://tinyurl.com/zh-hackathon
Innovation / IT
Zurich

**Swiss ICT Symposium 2013**
November 11-12, 2013
http://tinyurl.com/swiss-ict-symposium
ICT
Lucerne

**Collider: Step Inside the World's Greatest Experiment**
November 13, 2013 - Apr 30, 2014
http://tinyurl.com/collider-Nov
Particle Physics
Science Museum, London

**TBLI Conference Europe: 'Rethink The Past And Move On'**
November 14-15, 2013
http://bit.ly/16INmMJ
Sustainable Finance
Zurich

**CRAG – IRGC Symposium "Uncertainty: From Insight to Action"**
November 20-22, 2013
www.irgc.org/event/crag-irgc-symposium2013
Risk Analysis and Governance
EPFL, Lausanne

**Empa Technology and Innovation Forum**
November 28, 2013
http://tinyurl.com/Empa-Technology
Sustainable Innovation
Dübendorf

**XX WFN World Congress on Parkinsons Disease and Related Disorders**
December 08, 2013
http://www2.kenes.com/parkinson/Pages/Home.aspx
Life Sciences
Palexpo Geneva Congress Center, Geneva

**43rd Swiss Venture Day**
December 11, 2013
http://www.cti-invest.ch/
Innovation / Entrepreneurship
SIX Swiss Exchange, Zurich

**RE(ACT) 2014: International Congress on Research of Rare Diseases**
March 5-8, 2014
www.react-congress.org
Rare and Orphan Diseases
Novartis Campus, Basel

**Geneva Health Forum 2014: Global Health – Interconnected Challenges, Integrated Solutions**
April 15-17, 2014
http://ghf.globalhealthforum.net
Global Health
Geneva

**2014 Tech4Dev International Conference**
June 4-6, 2014
http://cooperation.epfl.ch/2014Tech4Dev
Technologies for Development
EPFL, Lausanne

**IC Research Day**
June 12, 2014
http://ic.epfl.ch/events-and-news
Big Data / Computer Science
EPFL, Lausanne

## Science-Switzerland Back Numbers

http://www.swissinnovation.org/Science-Switzerland