



Science-Switzerland, February - March 2014

News on Swiss science, technology, education and innovation

Table of Contents

1. Policy.....	2
2. Education	3
3. Life Science / Health Care.....	4
4. Nano / Micro Technology / Material Science	11
5. Information & Communications Technology	12
6. Energy / Environment.....	14
7. Engineering / Robotics / Space	17
8. Physics / Chemistry / Math.....	19
9. Architecture / Design	20
10. Economy, Social Sciences & Humanities.....	21
11. Technology Transfer / IPR / Patents	22
12. General Interest.....	23
13. Calls for Grants/Awards	23
Upcoming Science and Technology Related Events	25

swissnex Brazil Officially Opened

(NZZ, March 31, 2014)

Federal Councilor Johann N. Schneider-Ammann, head of the Federal Department of Economic Affairs, Education and Research (EAER), has visited Brazil from 3 to 5 April in order to strengthen economic relations and intensify scientific exchange with Latin America by opening the first swissnex on the continent. Brazil, which is a strategically important partner for Switzerland in Latin America, will now host the sixth swissnex worldwide. Brazil is the optimal location for the novel swissnex as it is the world's seventh largest economy and Switzerland's main trading partner in Latin America ahead of Mexico and Argentina. Brazil is also an important strategic partner in education, research and innovation (ERI) as the country's investment in research and development has grown by approximately 75% in real terms since 2000.

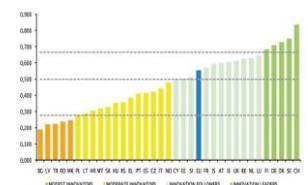


<http://swissinnovation.org/news/web/2014/00-140331-68>

Ranking: Switzerland Leads Innovation in Europe

(startupticker, March 06, 2014)

Switzerland retains its position as European innovation leader, based on the European Commission's Innovation Union Scoreboard (IUS) 2014 and the Regional Innovation Scoreboard 2014. The IUS draws on 25 different indicators, divided into three broad areas: Enablers, Firm activities and Outputs. Switzerland outperforms all EU member states on nine indicators, especially Open, excellent and attractive research systems (top on all three indicators) and Economic effects (top on two indicators – Employment in knowledge-intensive activities and License and patent revenues from abroad). However, it performs below EU average on SMEs collaborating with others (9.4% compared to 11.7% for the EU) and Exports of knowledge-intensive services (25.1% as compared to 45.3% for the EU).



<http://swissinnovation.org/news/web/2014/00-140306-9b>

Switzerland Ranks First In International Universities

(Times Higher Education, February 01, 2014)

A ranking of universities according to “international outlook” has been published by Times Higher Education. Swiss Universities occupy four of the top ten spots, including the first three. Two other Swiss universities also appear in the list of 100. EPFL is ranked first in the list. Factors used in measuring “international outlook” include the proportions of international students and faculty, and the proportion of research publications having at least one author from another country. The high ranking of Swiss universities, remarkable considering the small population of the country, may reflect the attractiveness of Switzerland as a place to live and work.



<http://swissinnovation.org/news/web/2014/00-140201-12>

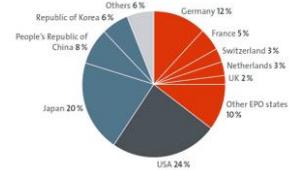


Ranking: Switzerland is #1 for Patent Filings per Capita

Switzerland has topped the list for patent filings per million inhabitants for the year 2013 with 832 applications. It precedes countries as Germany (6), Japan (9) and the United States of America (15), countries that are found in the top 10 of total European patent filings in 2013. With 24% the US is the most active country in filing patents at the European Patent Office (EPO), followed by Japan, Germany and China. From the Swiss countries ABB filed the largest number of patent applications with 455 patents, followed by Nestlé (435), Alstom (367), Roche (360) and Novartis (281).

<http://swissinnovation.org/news/web/2014/00-140314-df>

(SERI, March 14, 2014)



Participants for the Swiss National Startup Team Announced

(startupticker, March 20, 2014)

Venturelab and swissnex Boston have recently selected 20 young and promising entrepreneurs who will join the Swiss National Startup Team for the venture leaders program this June. The participants, who were chosen out of 120 contenders, are going to a 10-day business development training based in the U.S. In particular, they will be visiting Boston and New York, which will be the first time, to try to set foot on the U.S. market with their high-tech startups. The venture leaders' alumni address global challenges in a wide range of fields with their innovations ranging from recovering paraplegic patients' locomotion to insect-inspired micro-drones.

<http://swissinnovation.org/news/web/2014/00-140320-03>

15 Swiss Finalists for Red Herring's Europe Top 100 Award

(startupticker, March 24, 2014)

At the end of March Red Herring published the list of finalists for its "Europe Top 100" Award, among which 15 Swiss start-ups are represented. The Top 100 Europe forum monitors hundreds of cutting edge companies and technologies and select those who are positioned to grow at high speed. The promising private technology ventures have been evaluated through quantitative and qualitative criteria as well as a review of their actual track record and standing. The finalists from Switzerland include ActLight, Covagen, dacadoo, EDSI-Tech, Faveo SA, Hoosh Technology, Newscron SA, Nextthink, Pitcher, ROMO Wind, Run my Accounts AG, SGP Technologies SA (Blackphone), Starmind International, TallyFox, Teralytics.

<http://swissinnovation.org/news/web/2014/00-140324-b4>

Humboldt Prize Goes to Swiss Paleontologist

(Natural History Museum Bern, February 10, 2014)

The Swiss paleontologist Achim Reisdorf from the Natural History Museum Bern has successfully vitiated the myth of manure gas induced exploding cadavers, therewith winning the Alexander von Humboldt Prize. A question that many paleontologists have been asking themselves has always been why the bones of entire dinosaur skeletons are often distributed over a wide area. An accepted explanation had long been that the manure gases inside the cadavers would build up a pressure big enough to expel the bones from the body when exploding. However, Achim Reisdorf and a team of researchers from the forensic medicine could verify that the pressure buildup is not big enough to have such dramatic effects and instead the currents in the sea where responsible for the bone dispersal.

<http://swissinnovation.org/news/web/2014/00-140210-7b>

1. Policy

Highly Ranked Swiss International Cooperation

(Federal Administration, February 11, 2014)

The quality and effectiveness of Swiss international cooperation are recognized in the latest country review by the Organization for Economic Cooperation and Development (OECD) on Switzerland. The increase in official development assistance adopted by the Swiss Parliament, bringing it up to 0.5% of gross national income by 2015, is in the eyes of the OECD a major achievement in this period of international financial turmoil. At the same time, Switzerland has strengthened the strategic orientation and coherence of its international cooperation (technical and economic development cooperation, transition assistance, humanitarian aid) by combining activities under one common strategy for the Swiss Agency for Development and Cooperation (SDC) and the State Secretariat for Economic Affairs (SECO) in the 2013–2016 dispatch.

<http://swissinnovation.org/news/web/2014/01-140211-f3>



Ranking: ETH Zurich Highly Ranked in QS by Subject

(ETH Zurich, February 26, 2014)

The latest "QS World University Ranking by Subject" puts ETH Zurich in the top three universities for environmental science and in the top ten for several other subjects, including electrical engineering, computer science, mathematics, chemistry, biology, and geo- and ocean science. Such rankings show that ETH Zurich competes with the top research universities in the world. The study looks at publication citations and peer surveys for its rankings.

<http://swissinnovation.org/news/web/2014/06-140226-94>



Success story: Success of Export-Oriented Innovation Funding

(Federal Administration, February 25, 2014)

To counter the effects of the strong Swiss franc, the Swiss federal government created an incentive package, part of which included CHF 100 million funding to the Commission for Technology and Innovation (CTI). The CTI funded 247 projects with export-oriented companies to spur innovation projects that would have otherwise gone unfunded. 75% of companies were small and medium enterprises, and many projects brought new firms into the CTI sphere. A recent study shows that this funding achieved its goals of spurring innovation and strengthening research ties between industry and academia. Response to the incentives was generally positive and an additional funding package in 2012 extended the original program.

<http://swissinnovation.org/news/web/2014/01-140225-76>

Temporary Replacement for ERC Grants

(University of Zurich, March 10, 2014)

In order to maintain a strong research environment in Switzerland, the Swiss National Science Foundation (SNSF) offers temporary funding instruments for excellent researchers, since they are currently unable to apply for European Research Council (ERC) grants. The SNSF created in collaboration with the State Secretariat for Education, Research and Innovation (SERI) funding schemes that correspond to the ERC Starting and Consolidator Grants. At a later stage funding for an equivalent of the Advanced Grants will be decided. The application deadlines for the ERC Starting Grants (March 25) and Consolidator Grants (May 20) are retained.

<http://swissinnovation.org/news/web/2014/01-140310-69>

Cooperation Agreement Between the European Space Agency and CERN Signed

(Federal Administration, March 28, 2014)

CERN and the European Space Agency (ESA) have recently signed a cooperation agreement in the presence of State Secretary Mauro Dell'Ambrogio. The pioneering work of both institutions is symbolic for the longstanding success of European collaboration. The newly signed agreement will enhance information exchange as well as providing a basis for competencies between the two organizations. Strengthening the cooperation of these prestigious institutions will enhance the possibilities for joint developments and lead to further efficiency improvements. Switzerland's participation in the ESA enables researchers across the country to collaborate on cutting-edge scientific research or the development of prototypes to industrial implementation.

<http://swissinnovation.org/news/web/2014/01-140328-58>

2. Education

Masterclasses in Particle Physics for High School Students

(CERN, March 10, 2014)

In March and April 2014, CERN (the European Organization for Nuclear Research) held the 10th annual edition of its International Masterclasses, with more than 10,000 high school students from 40 countries participating. The students were particle physicists for a day, analyzing real data from CERN's Large Hadron Collider (LHC). In association, scientists at some 200 universities and laboratories hosted International Masterclasses locally. This extension of the CERN program is enabled by the International Particle Physics Outreach Group (IPPOG). Just as in many real collaborations in particle physics, students experienced the international aspect when they present their findings at the end of the research day, via a video link with CERN or with Fermilab.

<http://swissinnovation.org/news/web/2014/02-140310-cd>

New EPFL Branch in Fribourg

(EPFL, March 11, 2014)

A branch of the EPFL is set to open in Fribourg following the signing of an agreement between the Fribourg cantonal government and the EPFL. EPFL Fribourg will consist of five research chairs whose areas of interest lie in



building technologies such as fluid mechanics, materials science, and renewable energy production systems. The establishment of the Smart Living Lab (SLL) will be an integral part of the branch as it itself will embody the concept of sustainable building. The SLL will also reinforce the existing strengths of the School of Engineering and Architecture of Fribourg and the University of Fribourg in architecture and civil engineering, and serve as a step towards the canton's participation in the National Innovation Park project.

<http://swissinnovation.org/news/web/2014/02-140311-29>

Logitech Joins EPFL's "Under One Roof" Project

(EPFL, February 10, 2014)

Following a CHF 1 million donation, Logitech has now officially joined the EPFL's "Under One Roof" Project, under which a new Art & Sciences space in the form of three new pavilions on Cosandey Square will be built. Consistent with Logitech's love for music and mission to enabling the enjoyment thereof, the donation will go towards encouraging innovation in the fields of audio and video technology - areas which EPFL's researchers have been intensively developing. With the project's completion anticipated in 2015, Cosandey Square's three new buildings will serve as a presentation space, house the Montreux Jazz Lab, and facilitate the development of futuristic scenography respectively, inevitably becoming a hub of interdisciplinary activity that will bridge the arts and sciences.

<http://swissinnovation.org/news/web/2014/12-140210-0b>

3. Life Science / Health Care

Innovative Blood Testing by Smartphone

(CTI Entrepreneurship, February 05, 2014)

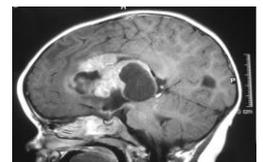
Soon, a simple disposable biofilm and a touchscreen smartphone may be all that is needed to run multiple blood tests. This innovative technology, invented and patented by Qcloudlab, relies on the ability of touchscreen sensors to detect a low variation of charges on the screen surface which in turn enables the bio-sensing detection of molecules. Exploiting the potential of touchscreen technology as a diagnostic tool and the fact that approximately 1 billion smartphones are currently in use, the biotech company, based at EPFL, stands to take a significant share of the CHF 12.6 billion Point of Care (PoC) diagnostics market.

<http://swissinnovation.org/news/web/2014/03-140205-21>

Removing Brain Tumors Without Operation

(20min, March 13, 2014)

For the first time physicians of the Children Hospital in Zurich have been successfully neutralized a brain tumor without having to open the skull of the patient. The novel therapy consists of generating ultrasonic high-energy and focusing it on the tumor for a few seconds, therewith heating it up to 60 degrees Celsius. This non-invasive therapy allows killing the tumor cells by heat and has been utilized in several other forms of cancer. According to the report, this method has been used for the first time on brain tumors.



<http://swissinnovation.org/news/web/2014/03-140313-b7>

Zurich is one of 15 Centers for Prenatal Surgery

(20min, February 16, 2014)

The last years have seen a steady increase in prenatal surgeries and Martin Meuli from the Children Hospital Zurich is one of 15 surgeons worldwide practicing in this emerging field. He has already performed surgery on 12 unborn children suffering from the malformation spina bifida. One out of thousand children is affected by this deformity, whose severe adverse effect on the child's life can be significantly reduced by prenatal surgery. The Children Hospital Zurich is working in close cooperation with the Center for prenatal surgery of Philadelphia and an American specialist is available to provide advice and assists during every surgery.



<http://swissinnovation.org/news/web/2014/03-140216-24>

Killing Tumor Tissue with Heat

(ETH Zurich, March 24, 2014)

ETH Zurich researchers have recently developed novel gold-based plasmonic particles, which heat up when they absorb near-infrared light. Such nanoparticles have a wide range of applications and could potentially be used to kill off tumors by heat. By molding gold into rods or shells, the gold atoms adopt a configuration that starts absorb-



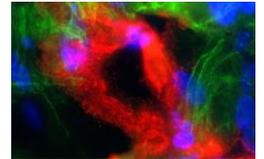
ing near-infrared light, thereby generating heat. The research team headed by Sotiris Pratsinis, Professor of Particle Technology at ETH Zurich, has found an inexpensive way to manufacture plasmonic gold particles in large amounts and has successfully tested them on breast cancer cells in a Petri dish.

<http://swissinnovation.org/news/web/2014/03-140324-4f>

Bioengineering Skin Grafts with Blood and Lymphatic Capillaries

(NZZ, February 05, 2014)

The first bioengineered, autologous, dermo-epidermal skin grafts are presently undergoing clinical trials in the children's hospital in Zurich. The team led by Ernst Reichmann has invested more than 10 years of research in the development of artificial skin that can completely replace human skin in medical care. It is now possible to envisage the next clinical step at the forefront of plastic and burn surgery, which is the generation of autologous skin grafts that contain vascular plexuses, preformed in vitro. The researchers demonstrated that functional lymphatic capillaries can be generated using three-dimensional hydrogels. Successful preclinical results suggest that these skin grafts could be applied on patients suffering from severe skin defects.



<http://swissinnovation.org/news/web/2014/03-140205-1c>

ERC Grant for Cell Information Exchange Research

(University of Bern, February 06, 2014)

Eduardo Moreno, Professor for cell biology at the University of Bern, has been awarded with a European Research Council Consolidator Grant of \$ 2.7 millions for his research in information exchange between cells. Disturbances in such exchange mechanisms can substantially hamper the health status of cells. A molecular code with specific proteins on the cell surface can indicate unhealthy cells, in order to get them eliminated and replaced. The group is currently trying to understand how cells recognize those molecular codes on the cell surfaces and how this mechanism could be reproduced as a therapy against cancer.

<http://swissinnovation.org/news/web/2014/03-140206-b0>

Transcription Factor Found for Skincare and Cancer Prevention

(ETH Zurich, February 06, 2014)

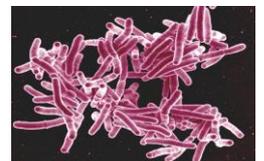
In 2004, former President of the Ukraine, Viktor Yushchenko, was poisoned with a high dose of dioxin. Although he survived the attack, the chloracne caused by the poisoning (called MADISH) left his face severely disfigured. A team of ETH Zurich researchers has identified a link between chloracne and a molecular switch that causes a comparable skin phenotype in mice. The findings have been published in EMBO Molecular Medicine. The molecular switch is Nrf2, a transcription factor that activates certain genes that protect cells and help them survive under stress conditions. The researchers discovered that moderate activation of Nrf2 protects skin cells from aggressive free radicals, formed through UV radiation. Nrf2 is thus an interesting candidate for use in skincare creams and for cancer prevention.

<http://swissinnovation.org/news/web/2014/03-140206-70>

Structure of Bacterial Defense Protein Elucidated

(University of Zurich, February 07, 2014)

Similar to humans, bacteria can also be attacked by viruses and they have likewise developed a mechanism to protect themselves against them. The bacterial defense is based on a special cutting protein, which is able to read the letter sequence of DNA and to cut it specifically. The mechanism of action has been shown for the first time in images by biochemists of the University of Zurich. A central part of the Clustered Regularly Spaced Inter Short Palindromic Repeats defense system is the protein Cas9, which can be seen in the images taken from X-ray structure analysis and electron microscopy.



<http://swissinnovation.org/news/web/2014/03-140207-22>

Mode of Action of Antique Epilepsy Diet Unraveled

(University of Zurich, February 10, 2014)

Researchers from the Center for Neuroscience Zurich collaborated with the McGill University to find a new link between metabolism and signal transmission in nerve cells. This enables scientist to understand the mode of action of an antique diet used as epilepsy therapy, which previously had been poorly understood. The "ketogenic diet", which is low in carbohydrates but rich in fats and proteins, alters the energy production of nerve cells in such a way that anti-epileptic signals are amplified. The diet produces an excess of free radicals, which inhibit signal transmission of nerve cells, therefore inducing a self-easing effect of hyperactive nerve cells.

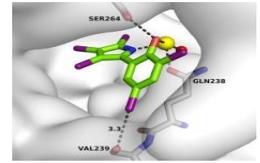
<http://swissinnovation.org/news/web/2014/03-140210-34>



Marine Bacterium-derived Substances Disrupt Pathogen and Weed Metabolism

(ETH Zurich, February 11, 2014)

A research consortium led by chemists at ETH Zurich has demonstrated how a newly discovered class of substances from a marine bacterium interferes with the metabolism of pathogens and weeds. The study, published in *Angewandte Chemie*, investigated pseudilins, which inhibit an enzyme involved in producing protective terpenes in plants and various single-cell organisms. The project is part of a larger program for structure-based drug design, involving the Tropical Institute at the University of Basel, TU Munich, the universities of Dresden and Hamburg, and the industrial partner BASF. It aims to produce and evaluate effective pseudilin derivatives, which may replace antibiotics and herbicides to which resistance has developed. This may help combat life-threatening diseases, like malaria or tuberculosis, and limit competition to crops, thus increasing yields.



Veterinary Medicine Against Whipworm Successful for Humans

(NZZ, February 19, 2014)

Researchers at the Swiss Tropical and Public Health Institute have discovered that the veterinary drug Oxantel Pamoate for whipworm infections were more efficient than conventional therapies with Mebendazole und Albendazole. Together with pharmacists from the University of Basel, the team of researchers examined the effect of the veterinary drug with the traditionally therapy in Tansania, by administrating the drugs to over 450 schoolchildren infected with whipworm and other sorts of worms. The Oxantel Pamoate medicine was able to cure 26 percent of the children from their worm infections, compared to the 12 and 3 percent achieved with Mebendazole and Albendazole, respectively.



<http://swissinnovation.org/news/web/2014/03-140219-cb>

Immune Cells Regulate Blood Stem Cells

(University of Bern, February 21, 2014)

Researchers in Bern have discovered that, during a viral infection, immune cells control the blood stem cells in the bone marrow and therefore also the body's own defense. The findings could allow for new forms of therapy, such as for bone marrow diseases like leukemia. During a viral infection, the body needs various defense mechanisms – amongst other things, a large number of white blood cells (leukocytes) must be produced in the bone marrow within a short period of time. In the bone marrow, stem cells are responsible for this task: the blood stem cells. Now, for the first time, researchers at the Department of Medical Oncology at the University of Bern and Bern University Hospital headed by Prof. Adrian Ochsenbein have investigated how the blood stem cells in the bone marrow are regulated by the immune system's so-called T killer cells during a viral infection.

<http://swissinnovation.org/news/web/2014/03-140221-45>

Bioengineered Growth Factors Help Heal Wounds Faster

(EPFL, February 21, 2014)

Growth factors are proteins that occur naturally in cells and guide processes ranging from wound healing to embryonic development. They have a wide range of potential clinical applications, e.g. in trauma situations, to quickly repair wounds and avoid blood loss. However, results in the clinic have been disappointing. EPFL researchers have shown that a relatively simple modification can greatly improve the clinical potential of growth factors, by making them more efficient, cost-effective and safe. Publishing in *Science*, the group has shown that their bioengineered growth factors have significantly improved efficiency in soft tissue and bone repair, even at low and safe doses. It is now planning to extend its studies to larger animal models and eventually begin preliminary human trials.



<http://swissinnovation.org/news/web/2014/03-140221-66>

Device Enables Surgeons to See Tumor Cells in Real Time

(EPFL, February 12, 2014)

The EPFL spin-off company Samantree Technologies is developing a medical device they call HistoScope. The device is a solution to the problem surgeons face when trying to remove tumors. Because the edges of the tumor are not visible to the naked eye, the surgeon cannot be sure that the entire tumor has been removed, resulting in a subsequent surgery. Samantree's device is essentially a series of tiny microscopes, each smaller than 1 mm. Using the light captured by each small microscope, the device can achieve high magnification and resolution, while at the same time expanding the field of view by 40x or more.

<http://swissinnovation.org/news/web/2014/03-140212-6b>



Swiss Drug Giant Buys Cambridge Cancer Drug Firm

(The Boston Globe, February 17, 2014)

The Swiss drug giant Novartis AG has recently forestalled the Cambridge biotech CoStim Pharmaceuticals Inc., which is specialized on the emerging field of immunotherapy. The latter is a novel therapy approach to fight of cancer by stimulating the patient's immune system through medication. Novartis Cambridge-based researchers working on immunotherapy have been trying to combat cancer by removing T cells from cancer patients, modify them and reintroduce them. The drugs that are being developed by CoStim will allow the T cells to fight cancer more efficiently without having to remove them.

<http://swissinnovation.org/news/web/2014/03-140217-b8>

New Automated Histology Technique

(University of Lausanne, February 11, 2014)

By teaching a computer to analyze histological samples, scientists at the University of Lausanne are able to study tissue differentiation at high resolution and measure developmental processes at the cellular level. The work combines the talents of molecular biologists and bioinformaticians. Their work initially is with the wild cress plant, *Arabidopsis thaliana*. This small flowering plant is widely used as a model organism in plant biology and genetics, because of its short life cycle. The new technique, called automated quantitative histology, will likely be able to be used in the study of larger, more complex organisms, including animals.

<http://swissinnovation.org/news/web/2014/03-140211-b3>

Moor Frogs Have Quickly Adapted to Acid Rain

(NZZ, February 19, 2014)

Researchers from the aquatic research institute Eawag have found that moor frogs in Sweden were able to adapt to the new natural environment, which involves acid rain and acid ponds, within only a few decades and moreover were able to enhance their life expectancy. The pollywogs of frogs from acid ponds prospered better in low pH environments, by growing faster and having a stronger tail. In order for this evolutionary adaption to happen in such a short time period, it appears that large populations and a rich genetic variety are required.

<http://swissinnovation.org/news/web/2014/03-140219-c4>



How Ants Protect Their Queen During Floods

(swissinfo, February 20, 2014)

Researchers at the University of Lausanne have shown that in times of flooding, worker ants protect their queen by putting her in the center of a raft made by linking their bodies together. The scientists of the Chapuisat Group studying Social Evolution came to this conclusion after conducting a series of experiments involving induced flooding in the laboratory using ant populations collected from a flood plain in Switzerland. Their studies have shown that the youngest members of the colony typically form the base because they are the most buoyant, and that despite the anticipated casualties caused by being in the most vulnerable position of the raft, survival rates are high. These findings were recently published in PLOS ONE.

<http://swissinnovation.org/news/web/2014/03-140220-56>

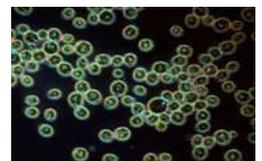


Uncovering Silver Ion Effects on Cellular Processes

(EAWAG, February 25, 2014)

Silver nanoparticles are used widely in industry and therefore released in vast amounts into the environment. Studies by scientists at EAWAG on the model algae *Chlamydomonas reinhardtii* have shown that silver exposure can cause changes in the activity of about 1000 genes and proteins in response to silver as a stressor while compromising the photosynthetic abilities of the algae. Although the algae were able to repair the damage to its intracellular processes caused by silver, a significant energy cost is incurred. This is potentially detrimental to entire ecosystems since algae are at the bottom of the food chain, and any adverse effects caused by silver would be multiplied in higher organisms. The question of whether the algae are able to actively get rid of silver remains.

<http://swissinnovation.org/news/web/2014/03-140225-22>



Farming Simulation Game for an Improved Amazon Protection

(ETH Zurich, February 25, 2014)

In order to understand how to efficiently protect the Amazon from forest clearance through farmers, a research group from ETH Zurich and FHNW Basel has developed a game, which simulates the important decision situation of a typical cattle farmer in the Brazil. The player is able to buy and sell cows, cut down forest and intensify new



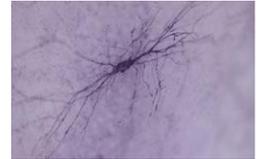
pastures. In order to track cultural characteristics in decision making, the game was played on site by cattle farmers, their family members as well as students from the agricultural faculty. It turned out that a payment model accounting for the CO2 savings benefits the forest preservation most, even without subventions.

<http://swissinnovation.org/news/web/2014/03-140225-f6>

Mechanism of Creating Memory Traces

(University of Zurich, February 25, 2014)

Neuroscientists at the University of Zurich have discovered that the common belief that memory traces are built by strong electric pulses is very likely to be wrong. Instead they found that weak but high frequency pulses are responsible for creating memories. They base their findings on the fact that there is surprisingly little activity to be observed on certain nerve cell pathways, which would be most likely to show the strong electric pulses. Furthermore, they were still able to create memories when they were suppressing the strong electric impulses, which indicate that the subliminal signals of nerve cells play an important role for memory traces.



<http://swissinnovation.org/news/web/2014/03-140225-99>

Brainstem Could Enable Recovery of Motor Functions After Stroke

(University of Zurich, February 25, 2014)

A stroke in the cerebral cortex often leads to severe movement impairment, due to the loss of neuron pathways responsible to transmit signals from the cortex to the spinal cord. Researchers at the Brain Research Institute of the University of Zurich have now discovered that the brainstem, an ancient part of the brain, could help in rerouting of neural impulses for motor functions by growing more nerve fibers into the area of the spinal cord that had lost its input after a stroke. "This could turn out to be a key mechanism which facilitates recovery after a stroke", claim the scientists, which are now using these findings to steer the sprouting of neurons in various areas of the brain by means of targeted therapy.

<http://swissinnovation.org/news/web/2014/03-140225-93>

New Insights in Methane Formation in Wetlands

(ETH Zurich, February 28, 2014)

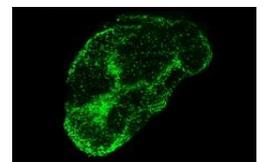
Publishing recently in Nature Geoscience, ETH Zurich scientists in the Environmental Chemistry Group have elucidated a process that could explain why methane emissions from wetlands are less than what is expected based on microbial activity. With the help of a lab model they created using a well-studied bacterium and various humic substances whose characteristics are well known, the researchers studied how these components interact under aerobic and anaerobic conditions, resulting in the transfer of electrons that determines whether methane is produced. They concluded that the repeated electron transfer to and from the humic substances can suppress methane production in systems with no oxygen, overall contributing to a better understanding of carbon dynamics in wetlands and global methane emissions.

<http://swissinnovation.org/news/web/2014/03-140228-ba>

Persistent Bacteria Outsmart Antibiotics

(ETH Zurich, March 10, 2014)

Pathogenic bacteria have two modes of resistance to antibiotic treatment. One is genetic resistance. The other, called persistence has not been studied as much. Scientists from ETH Zurich have been studying persistence of Salmonella in infected mice treated with ciprofloxacin. Sentinel cells (dendritic cells) in the animal's immune system respond to infection by engulfing a fraction of the pathogens and triggering an immune response. However, the sentinel cells are a low-nutrient environment, causing the bacteria to change their behavior, growing and replicating more slowly. The slow-growing bacteria do not respond to antibiotics. One idea that has come from the research is to find an agent that can artificially re-activate these bacteria, and combine it with an antibiotic.



<http://swissinnovation.org/news/web/2014/03-140310-a5>

LSD Reevaluated in Psychotherapy Drug Trial

(The New York Times, March 03, 2014)

In a double-blind, randomized, active placebo-controlled pilot study, the safety and efficacy of lysergic acid diethylamide (LSD)-assisted psychotherapy was examined in 12 patients with anxiety associated with life-threatening diseases. The study conducted in Bern found, that LSD could significantly reduce anxiety, as measured via the State-Trait Anxiety Inventory (STAI). Treatment included drug-free psychotherapy sessions supplemented by two LSD-



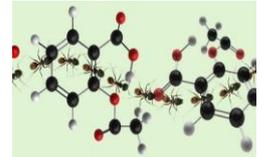
assisted psychotherapy sessions 2 to 3 weeks apart. The results indicate that when administered safely in a methodologically rigorous medically supervised psychotherapeutic setting, LSD can reduce anxiety. The researchers call for larger controlled studies in an effort to re-evaluate LSD for psychotherapeutic treatment.

<http://swissinnovation.org/news/web/2014/03-140303-28>

Effective Software Simulation for Computer-Assisted Drug Design

(ETH Zurich, March 17, 2014)

New drugs often fail because they cause undesirable side-effects. ETH researchers have developed simulation software that predicts the properties of active agents and virtually builds new ones. To date, the prediction of side-effects using a computer has been limited. "Our aim is to detect problems as early as possible and synthesize only the most promising active agents," explains Gisbert Schneider, Professor of Computer-Assisted Drug Design at the Institute of Pharmaceutical Sciences, ETH Zurich. Many potential candidates that prove to have undesirable effects can thus be eliminated quickly. Schneider's research team has developed a simulation module that can predict possible target activities of drug-like molecules more quickly and precisely than previous programs. The algorithm checks the interaction of a molecule with up to 640 human proteins in just a few minutes.

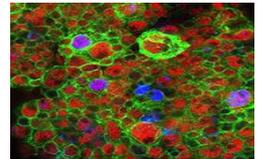


<http://swissinnovation.org/news/web/2014/03-140317-c3>

Mutations in Protein Complex Cause Brain Tumors

(University of Basel, March 24, 2014)

Researchers from the Bio Center of the University of Basel and the Austrian Academy of Sciences have found that a protein complex's loss of function can cause brain tumors. Mutations of the single components of the SWI/SNF complex are frequently observed in many human cancer cells, but the complex's role in the development of tumors was previously unknown. The study findings, published in *Cell*, explain the tumor suppressor activity of the SWI/SNF protein complex. Mutations can disrupt the function of the complex, leading to the dedifferentiation of progenitor cells. As these cells revert into neural stem cells, they can renew themselves and divide uncontrollably, causing brain tumors. A better understanding of the mechanisms underlying tumors that originate from stem cells can help improve treatment.



<http://swissinnovation.org/news/web/2014/03-140324-96>

Complete Medical Check-up on a Chip

(EPFL, March 03, 2014)

About the size of a stapler, this new handheld device developed at EPFL is able to test a large number of proteins in our body all at once—a subtle combination of optical science and engineering. Professor Hatice Altug and postdoctoral fellow Arif Cetin, in collaboration with Prof. Aydogan Ozcan from UCLA, have developed an "optical lab on a chip." Compact and inexpensive, it could offer to quickly analyze up to 170,000 different molecules in a blood sample. This method could simultaneously identify insulin levels, cancer and Alzheimer markers, or even certain viruses. Instead of analyzing the bio sample by looking at the spectral properties of the sensing platforms, this new technique uses changes in the intensity of the light to do on-chip imaging.



<http://swissinnovation.org/news/web/2014/03-140303-1d>

Family History Important for ADHD in Adults

(NZZ, March 04, 2014)

A study conducted by the University of Zurich and the University Hospitals of Zurich and Lausanne shows that four out of 100 young men suffer from an attention deficit hyperactivity disorder (ADHD). This finding reveals that the disorder is as common in grownups as it is in children and teenager. For a long time it has been a common believe that ADHD only affects children, which caused a lack of studies and data of ADHD for adults. The researchers found that the family history play a crucial role for the development of the disease.



<http://swissinnovation.org/news/web/2014/03-140304-ad>

Brain Circuitry is Plastic and Self-regulated

(University of Geneva, March 05, 2014)

A team of neuroscientists at the University of Geneva has demonstrated that brain activity controls the composition of brain circuits. By studying the visual system of newborn mice, the researchers found that the number of inhibitory neurons depends on the level of visual activity. The brain thus has an evolutionary "thermostat" that allows the self-



regulation of neuronal activity as certain circuits expand. This may help maintain a balanced level of excitation and avoid a potentially pathological overstimulation (e.g. epilepsy). Published in *Neuron*, the study shows that brain circuitry is more plastic than previously thought and that neuronal activity determines its cellular composition. Understanding the mechanisms that control how brain circuits form could help repair and protect vulnerable circuits from neurological diseases.

<http://swissinnovation.org/news/web/2014/03-140305-97>

Grazing Animals Improving Biodiversity of Meadows

(University of Zurich, March 10, 2014)

An international team of researchers comprising scientists from the University of Zurich have found that the loss of biodiversity on meadows by the utilization of fertilizers can be compensated by grazing animals. The beneficial effect results from animals eating the tall-growing plants and letting more sunlight down to the low-growing plants, which benefit substantially from the added light and therewith increase the biodiversity on meadows. On fertilized meadows the competition for nutrients is abolished and light becomes the rate limiting factor for plant growth.



<http://swissinnovation.org/news/web/2014/03-140310-16>

New Class of Molecules Targets Malaria Parasite

(University of Geneva, March 11, 2014)

The malaria parasite, particularly *Plasmodium falciparum* that causes the most severe form of malaria, is pernicious because it quickly develops resistance to treatment. The lack of new therapies also aids the pathogen's persistence. A team of researchers from the University of Geneva, the Geneva-Lausanne School of Pharmacy (EPGL) and the University of Basel has discovered a new class of molecules that tackles both problems. Heat Shock Protein 90 (HSP90) plays a central role in the life cycle, survival and resistance of the pathogen. Using highly sophisticated computer modeling tools, the team has identified molecule candidates that inhibit this protein. These 7-azaindole compounds are toxic for the pathogen, but not for infected human red blood cells.

<http://swissinnovation.org/news/web/2014/03-140311-76>

Antibiotic Against Tuberculosis

(EPFL, March 12, 2014)

Tuberculosis has seen resurgence, and is the cause of 1.5 million deaths each year. Collaborating with the AN Bach Institute in Moscow, EPFL researchers developed a new antibiotic called PBTZ169. The antibiotic is particularly promising because it is relatively easy to synthesize, and has shown high efficacy against multi-resistant strains of the tuberculosis bacterium when used in tri-therapy. The EPFL researchers formed the IM4TB Foundation, which is supported by EPFL, to bring the new treatment to market. They took this unusual approach because commercial pharmaceutical companies are finding it increasingly difficult to justify expensive drug development for indications that are only common in emerging economies. Human trials of PBTZ169 are slated for 2015.

<http://swissinnovation.org/news/web/2014/03-140312-80>

Parasites Interact in Humans Through Shared Food Sources

(University of Zurich, March 12, 2014)

Infections in humans caused by two or more different parasite species hamper diagnosis as well as efficient treatment since the ways in which the species interact with each other are typically poorly understood. Following the analysis of over 2,900 combinations of parasite species, host resources, and immune system components, a team of international researchers involving also scientist from the University of Zurich has come up with a network that shows how parasites affect each other. A key finding of theirs was that parasites are most likely to interact via shared food sources. The scientists hope their work will form the basis for the development of personalized medicine.

<http://swissinnovation.org/news/web/2014/03-140312-92>

Monogamy Feminizes Gene Expression in Fruit Flies

(University of Lausanne, March 18, 2014)

Males and females of many species share essentially the same genome, except for sex chromosomes, yet they vary greatly morphologically, physiologically and behaviorally. Some gene variations are more favorable to one gender over the other, and there is a perpetual conflict between the two genders to optimize the use of these shared genes. The outcome depends on the strength of selection on males versus females. In a study on fruit flies,



published in Nature Communications, researchers from the University of Lausanne investigated the effects of enforced monogamy over 100 generations. This reduced sexual competition among males, which tends to encourage selection of genes beneficial to males. The study showed that removing selection pressure from males resulted in higher expression of female genes in both sexes.

<http://swissinnovation.org/news/web/2014/03-140318-01>

Correlation Between BMI and Neighborhood

(EPFL, March 19, 2014)

A recent study conducted by researchers from the Geneva University Hospitals (HUG) and EPFL has revealed that for adults the place of residence correlates with the body-mass-index (BMI), more than it does with income levels. Their report furthermore suggested the need for a fine-grained assessment of public health to draw important insights for anti-obesity campaigns. The evaluation of the data divided the map into regions with predominantly high or low values, and a larger one where neither trend prevailed. The scientists discovered that the difference in income could not account for these findings. But instead they concluded that potential causes are social networks, sport infrastructure, and the promotion of softer forms of mobility could account for the distribution.

<http://swissinnovation.org/news/web/2014/03-140319-39>

Important Proteins May Occur as Unfolded Coils

(University of Zurich, March 24, 2014)

The common assumption concerning proteins has long been that they need to take their three-dimensional structure in order to adopt their highly specific functions in the human body. Researchers from the University of Zurich have now shown that unfolded protein coils are likewise capable of assuming highly complex functions. Furthermore, they found that the intrinsically disordered proteins (IDPs) become smaller when exposed to elevated temperatures and "molecular crowding", which takes into account that an enormous number of biomolecules are crammed into a very small space in our cells. The scientists claim that many experiments may have to be revisited as the spatial organization of the molecules in the organism could differ considerably from that in the test tube.

<http://swissinnovation.org/news/web/2014/03-140324-75>

New Tool to Assess Mutations Enabling Tamiflu-Resistance

(EPFL, March 31, 2014)

Flu viruses have a formidable adaptability owing to their fast rate of multiplication, which leads to an accumulation of genetic mutations. The flu virus therefore quickly develops resistance to one of the few available treatments for those who come down with the flu: Tamiflu. EPFL researchers have recently developed a tool that reveals the mutations enabling resistance. Resistance always occurs through random mutations but can be passed on to the virus' descendants, when it provides the virus with the ability to resist against a source of aggression, for example a drug. Using their statistics-based software tool the researchers were able to identify mutations that were suspected to cause resistance with a certainty of more than 99%.

<http://swissinnovation.org/news/web/2014/03-140331-cb>

New Polygonal Research Facility in Biosystems

(ETH Zurich, February 03, 2014)

The ETH Biosystems Department is moving to a new home on the Life Sciences campus in Basel. The polygonal teaching and research facility will be built by 2020, next to the two university clinics and the Biozentrum and Pharmazentrum of the University of Basel. The winning project (Nickl & Partner design) was chosen for the way the building integrates in the campus and arranges the rooms optimally for scientific use and operations. The open architecture will promote communication among interdisciplinary researchers. A GMP (Good Manufacturing Practice) laboratory will be installed, meeting both research laboratory standards and those of clinical laboratories, where patient studies may be carried out. Clean rooms will be available for engineering-focused developments, e.g. nano tools or lab-on-a-chip technology, genome sequencing and stem cell analysis systems.

<http://swissinnovation.org/news/web/2014/12-140203-3a>

4. Nano / Micro Technology / Material Science

Swiss Plastics Award

(FHNW, February 19, 2014)

Two graduates of the University of Applied Sciences of Northwest Switzerland were recognized for their bachelor's and master's theses on composite materials. Benjamin Bachmann wrote a bachelor's thesis on numerical flow modeling in compression resin transfer molding, a process used to rapidly manufacture carbon fiber reinforced



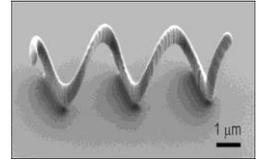
composites, as used, for example, in advanced automobiles. Separately, Lian Giger wrote a master's thesis on door hinges for aerospace applications. Complex metal hinges were replaced with light, recyclable carbon composite hinges. Lian's work led to a spin-off startup company. The Swiss Plastics Awards were awarded by an industry consortium and the Swiss Plastics Expo.

<http://swissinnovation.org/news/web/2014/04-140219-7f>

World's Smallest Medical Robot

The smallest robot worldwide is only a few micrometer long and has been created at ETH Zurich. The robot designed to be steered through the human body forces high design challenges on the researchers in terms of control and power supply. It is inspired by the flagella of the *E. coli* bacteria, which allows highly efficient locomotion. The metallic replica of the flagella is set in rotation by an external magnetic field, whose direction and intensity can be regulated and adjusted according to the direction the robot should swim. The ETH spin-off Aeon Scientific is currently working on the marketing of the new control technology.

(20min, March 14, 2014)



<http://swissinnovation.org/news/web/2014/07-140314-ba>

Hydrogel Micro-Robots Developed for Drug Delivery

(ETH Zurich, February 27, 2014)

The toxicity of many drugs creates high risk of destroying healthy cells when attempting to treat disease. Scientists at ETH Zurich's Institute of Robotics and Intelligent Systems (IRIS) have developed a tiny robot about a half-millimeter in diameter that may provide a solution. The robot comprises a star-shaped, bi-layer, soft hydrogel shell that, when closed, forms a sphere and holds tiny magnetic beads inside. When the robot reaches the desired location, laser irradiation causes the hydrogel to change shape and the capsule to open, delivering the drug. The hydrogel robot has been tested only in-vitro, but the scientists believe they can miniaturize it enough to test it in animals in the future.

<http://swissinnovation.org/news/web/2014/07-140227-32>

Novel Plaster Controls Humidity

(Empa, February 03, 2014)

Water vapor generated by cooking, taking a shower or drying damp clothes can condense on cold walls, encouraging the growth of mildew and microbes. The company Sto AG, in collaboration with Empa, has developed a special wall plaster to deal with this problem. Its ability to absorb moisture from the air is significantly better than that of conventional lime plaster and even that of clay rendering. The newly developed moisture-buffering plaster can in fact absorb 90 g of water vapor per square meter, measured by the standardized «Nordtest» method. This exceeds the capacity of the best clay rendering, measured for comparison purposes, by about 30 per cent. The health and economic advantages offered by a relatively stable air humidity are enormous. Occupants and furnishings are less stressed, and energy consumption drops because dry air can be brought to a comfortable room temperature more quickly.

<http://swissinnovation.org/news/web/2014/04-140203-97>

Encapsulated Nanotech Coating Improving Medical Implants

(University of Fribourg, February 13, 2014)

Researchers from the University of Fribourg have developed a new method to encapsulate nanoparticles on coatings for medical implants. Implanting artificial hip and knee joints are standard surgeries increasing the live comfort substantially at an older age. However, they also bear the risk of infections if bacteria are located on the implant's surface. Within the national research project "Intelligent Materials" the team of Prof. Katharina Fromm from the Department of Chemistry has successfully coated implants with silver nanoparticles, therewith enhancing the antimicrobial properties of the coating and decreasing the chances for infections and succeeding complications. This novel treatments is currently being examined with in-vivo tests.

<http://swissinnovation.org/news/web/2014/04-140213-5a>

5. Information & Communications Technology

Best Swiss Encrypted Alternative to WhatsApp

(startupticker, February 20, 2014)

Following the acquisition of WhatsApp by Facebook, the Swiss app Threema has been all over the media and is traded as one of the most promising alternatives to the most prominent messenger app. Threema's main focus is



on security and utilizes a special encryption, which is done directly on the device. This true end-to-end encryption guarantees according to the developers, that no one can read a message except the intended recipient. In contrast to other popular messaging apps including those that use encryption, not even the server operator is able to read the messages.

<http://swissinnovation.org/news/web/2014/11-140220-0b>

Swiss App Safeguarding Your Privacy

(EPFL, March 26, 2014)

Two EPFL researchers have developed an application that automatically secures shared information on a mobile phone. The Android app should be available in late summer 2014. Social networking and the instantaneous sharing of information have revolutionized the way we communicate. Our mobile phones are able to automatically obtain information such as our current location and activities. This information can be easily collected and analyzed to expose our private life. Two EPFL researchers have developed an intelligent application that, once past the beginning machine learning stage, decides for the user what information to transmit or not, and at what level of detail. A large-scale Android OS trial is scheduled for late summer 2014 to provide real data to validate the approach and refine the tool.

<http://swissinnovation.org/news/web/2014/11-140326-7b>

Multimillion Research Cooperation with Microsoft

(EPFL, February 05, 2014)

ETH Zurich and EPFL have entered into a 5-year, CHF 5 million research agreement with Microsoft, thereby building on previous agreements. Seven projects, from a pool of 27 applications, were chosen by a panel from the universities and Microsoft. Doctoral students for the projects will be funded too. The goal of the agreement is to take advantage of the combined capabilities of the universities and Microsoft Research, which is involved in each of the projects. Projects will research a range of topics, including energy efficient data centers and human-robot interactions.

<http://swissinnovation.org/news/web/2014/05-140205-57>

Emotion Recognition Software Tested at Olympic Games

(EPFL, February 07, 2014)

EPFL researchers successfully tracked the emotions of the viewing public during the Olympic Games in Sochi. They showed in real time what people were feeling during the competitions, based on data collected from social media, principally Twitter. Using an application, called EmotionWatch, the various emotions were displayed in the form of a colored pie chart. This virtual watch showed the strongest trends on the computer screen, with a disk that changed color depending on the intensity of emotion. Each of the 20 feelings considered had a specific color – yellow for joy, red for anger, and blue for worry. The application could be used for commercial purposes or marketed to see consumers' reactions to a new product, or those of voters during the presentation of candidates in a political election.

<http://swissinnovation.org/news/web/2014/05-140207-b7>

Ethical Chatbot for Morally Difficult Dialogues

(FHNW, February 11, 2014)

Three students from the University of Applied Sciences Northwestern Switzerland (FHNW) have developed a chatbot that is able to respond appropriately to morally difficult dialogues. Chatbots are virtual interlocutors that interact with users, but many chatbots are unable to react suitably to statements and questions with moral implications. The difficulty for chatbots is to correctly interpret the statements in the specific context and reply accordingly. The novel chatbot named GOODBOT is able to identify the context-related meaning of statements and classify them semantically by rating different words and phrase fragments. The collective of all rated pieces is then transferred on a scale, which is able to indicate emotional state of the users and allows the chatbot to act accordingly.

<http://swissinnovation.org/news/web/2014/05-140211-c9>

Swiss Pavilion Draws Crowds at Mobile World Congress

(startupticker, February 13, 2014)

Switzerland's official presence for the first time in the form of the Swiss Pavilion drew much international media coverage and presented many business and networking opportunities for the country's top 19 start-ups at this year's Mobile World Congress (MWC). With 85,000 attendees and over 1,800 companies in attendance this year in Barcelona, the MWC is widely hailed as the industry's defining event. The 19 companies including Qipp, Echovox,



and EDSI-Tech presented their innovative mobile solutions as part of Switzerland's "More than Chocolate" campaign. The Prince of Spain and the Swiss Ambassador to Spain were amongst some of the distinguished visitors to the Pavilion.

<http://swissinnovation.org/news/web/2014/05-140213-5d>

Piz Daint Supercomputer Available for Use

(ETH Zurich, March 21, 2014)

Piz Daint, the Swiss supercomputer that is the most powerful in Europe, was recently upgraded and is now available for general users. The computer, which uses a combination of regular processors and graphical processing units, has a theoretical peak of 7.8 petaflops and is among the most energy efficient supercomputers, at 3.2 gigaflops per watt. Piz Daint resides at the Swiss National Supercomputing Centre. It is part of the National High-Performance Computing and Networking Strategy and the High-Performance and High-Productivity Computing programs. The latter focuses on software improvements to match hardware improvements.

<http://swissinnovation.org/news/web/2014/05-140321-fd>

Quantum Computing Machine Under Scrutiny

(ETH Zurich, March 17, 2014)

A Canadian company, D-Wave, is selling what it claims is the first commercially available quantum computer. Researchers at ETH Zurich worked with the University of Southern California in the US to test the computer and determine whether it is truly a quantum computer and what the performance gains are. They discovered that the device does use quantum effects, but they are very short-lived. Also, it is not a general computing device, but rather an analog device that is designed to solve an optimization problem using simulated annealing. Also, according to the latest tests, the device is slower than a regular computer that runs optimized code.

<http://swissinnovation.org/news/web/2014/05-140317-05>



Google Glass Development in Switzerland

(swissinfo, March 21, 2014)

Google last year released Google Glass, a head mounted display that may revolutionize mobile computing. The non-profit Icare research institute in Sierre obtained a Google Glass set and has been developing apps for it. One app, for example, scans product bar codes and provides nutrition and safety information, and other app reads license plates to determine illegally parked cars. Many other applications are envisioned, and Sierre seems to have become a center for Google Glass app development.

<http://swissinnovation.org/news/web/2014/05-140321-b1>



6. Energy / Environment

"Blue Diversion" Toilet Project Awarded Prize by International Water Association

(EAWAG, March 11, 2014)

Blue Diversion was recently awarded a prize by the International Water Association in recognition of the project's innovative approach to water management and sustainability. Developed by researchers at the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) in collaboration with co-workers in Vienna, Blue Diversion is a grid-free toilet that is able to recycle its own water by in situ biological treatment. The creators' unique design, in response to the Gates Foundation's Reinvent the Toilet Challenge, incorporated both high and low tech elements to ensure that their toilet would be technologically sophisticated enough to provide effective sanitation, yet still be producible on an industrial scale. Preliminary field tests have been carried out in Uganda with new prototypes in the pipeline as the team is currently looking for industrial partners and investors.

<http://swissinnovation.org/news/web/2014/00-140311-19>



Using Summer Heat for Cold Winter Days

(20min, February 21, 2014)

In winter, radiators and underfloor heating systems are running at full speed. Solar panels can contribute to the necessitated energy requirements, however most energy is provided during the summer months. One way of conserving the summer heat for the cold season, has been developed by the University of Applied Sciences Rap-



perswil which is a deep underground water basin. The installation is currently being tested at the Rapperswil kindergarten, where solar panels are installed at the roof of the building and heat up the water in the pool to 40 degrees over the sunny summer months. Since the beginning of winter this heat is extracted for heating. Depending on the building around 80 percent of the total heating energy could be saved with this novel approach.

<http://swissinnovation.org/news/web/2014/06-140221-a6>

Volcanic Eruptions Lead to Cold, Rainy Summers in Europe

(University of Bern, February 13, 2014)

A recent study published by researchers from the University of Bern elucidates on how strong volcanic eruptions in the tropics can cause cold, rainy summer in Europe. The ejected volcanic emissions in the atmosphere block the sunlight and can therewith strongly influence the average yearly rainfall in other parts of the world. The researchers suspect that variations in the African monsoon, caused by the reduced sunlight, could be responsible for the rainy European summer. In addition, historical records indicate that strong tropical volcanic eruptions are often followed by a more rainy and cooler summer in Central Europe than the normal average.

<http://swissinnovation.org/news/web/2014/06-140213-a0>

Smart Meters Correctly Interpreted

(ETH Zurich, February 20, 2014)

Smart Meters have been criticized for offering only minimal advantages at a high privacy cost. ETH Professor Thorstan Staake contends that this is not due to the features of smart meters, but much rather because they don't present their information in an appropriate way. Studies have shown that such meters are reducing power consumption by approximately 3% in practice, while allowing for detailed profiling of their users. However, a study with the depicted product of the ETH spinoff amphiro demonstrates that this is not necessarily the case. The participants in the study who measured their water consumption saved as much as 20% energy on average - and by doing so would have also saved 8,500 liters of drinking water.



<http://swissinnovation.org/news/web/2014/06-140220-0a>

Higher-Voltage Direct-Current Transmission Supergrid

(ETH Zurich, March 06, 2014)

On 12 March it will be the centenary of George Westinghouse's death. The inventor helped energy transmission with alternating current make a breakthrough and it has been the norm all over the world ever since. In order to build the power grid of the future, ETH Zurich engineers are now conducting research into DC voltage technology. Alternating current changes direction periodically. Compared to direct current, which always flows in the same direction, it has the disadvantage that it generates considerably higher losses during transmission. As part of the energy transition, Europe is now looking to supply consumer centers with sustainable electricity over large distances. The focus is on so-called high-voltage direct-current transmission (HVDC), which is able to transport energy with losses of merely around 3% per thousand kilometers. HVDC will form the basis for the European "supergrid", which is to be constructed parallel to the existing alternating current grid.



<http://swissinnovation.org/news/web/2014/06-140306-87>

New App to Combat Ragweed

(University of Fribourg, March 12, 2014)

Crowdsourcing can be brought to bear against the invasive plant *Ambrosia artemisiifolia*. Thanks to a new iPhone application, amateurs can now locate this highly allergenic weed throughout Europe and help gain a better overview of its spread. The European research project SMARTER (Sustainable management of *Ambrosia artemisiifolia* in Europe), led by the University of Fribourg, has been coordinating international efforts to combat ragweed since 2012. Its new tool, the SMARTER *Ambrosia* Reporter, can be downloaded from the Appstore. Based on the Dutch *Ambrosia* Melder, it was developed with the support of a Dutch application development team. The tool is available in two versions – one for amateurs and one specifically for scholars and researchers – in English, German, French and Italian.



<http://swissinnovation.org/news/web/2014/11-140312-05>

Predicting Dynamic Behavior of River Networks

(ETH Zurich, March 06, 2014)

A team of ETH Zurich and MIT researchers have found that river channels are much more changeable than assumed and the scientist furthermore found that they could predict the direction in which the boundaries between the water catchments will migrate. The researchers had created a method which allows them to determine the de-



gree of equilibrium between river catchments by using a new calculation method. The later utilizes a metric based on the geometric characteristics of the river network. Changes in the landscapes, such as changing river networks, can isolate or mix different ecosystems, therefore enhancing the biodiversity of the involved areas strongly.

<http://swissinnovation.org/news/web/2014/06-140306-0e>

Universities' Roles in Sustainability

(ETH Zurich, March 07, 2014)

At a conference during Sustainability Week at ETH Zurich, the rectors from ETH Zurich, Prof. Lino Guzzella, and University of Zurich, Prof. Michael Hengartner, were joined by a member of parliament, Tiana Angelina Moser, to discuss the role of universities in sustainability. Both university leaders talked about how sustainability needs to be integrated in all academic thinking and that both institutions had made considerable progress in this matter. Ms. Moser asked the universities to provide a voice when difficult issues are discussed publicly, and not just focus on publications. The rectors countered that complex issues have complex answers and politicians need to find solutions even with such answers.

<http://swissinnovation.org/news/web/2014/06-140307-cf>

Tackling Energy Crises Using Sociology

(ETH Zurich, March 12, 2014)

Recently, ETH Zurich Professor of Sociology Dirk Helbing and his team posed a very important question: What would happen if a major supplier to the European gas network were suddenly cut off? To study this, the researchers created a model using extensive amounts of data they collected on population density, pipeline networks, and gas flows throughout Europe. With their model, they concluded that bottlenecks can arise in the pipeline network if countries seek alternative sources for their gas. From their studies, it is clear that the market by itself cannot distribute gas fairly in the event of a crisis and that cooperation and agreements between countries on aspects of the algorithm would be necessary prior to its implementation if it is to function well.



<http://swissinnovation.org/news/web/2014/06-140312-69>

Fire-blight Resistant Apples Developed

(ETH Zurich, March 13, 2014)

Researchers from ETH Zurich and the Julius Kühn Institute in Germany have successfully transferred a fire-blight-resistance gene from a wild apple into the genome of a Gala apple. This process called cis-engineering has proven to generate resistant apples and could avoid the severe effects of major fire-blight epidemics, which hit apple plantations regularly and generate damage large losses of apple trees and revenues. This is the first time that researchers successfully identified and isolated the gene for fire-blight resistance in a wild apple. One gen is sufficient to protect the plant against the disease by recognizing a surface protein of the pathogen and thereafter triggering a defense response in the plant affected.

<http://swissinnovation.org/news/web/2014/06-140313-3f>

Smart Cooling Systems Required for Sustainable Future

(ETH Zurich, March 20, 2014)

Developing sustainable and energy-efficient technologies for new cooling systems are especially important for countries with a hot climate. Researchers from the Future Cities Laboratory (FCL) have shown in preliminary results that they could reduce the required energy for cooling systems by 60 percent, when implementing a range of technologies developed at ETH. These include radiant heat exchange, decentralized ventilation, and wireless sensors that measure the temperature and adapt air-conditioning individually for every room.



<http://swissinnovation.org/news/web/2014/06-140320-e7>

Iron Fertilization Cools the Climate

(ETH Zurich, March 20, 2014)

New research from ETH Zurich shows that during the last ice age, algae blooms cooled the climate. In the Southern Ocean, there was a deficiency of iron, an important element to fertilize algae, but winds started blowing iron from the southern tip of South America into the ocean in large quantities. Now with sufficient nutrients in the ocean, algae was able to bloom, which in turn drew carbon dioxide out of the atmosphere and cooled the climate. This theory was verified through the analysis of drilled sediment cores and the isotopes related to the nitrogen and carbon cycles. However, recreating this process artificially is not feasible.

<http://swissinnovation.org/news/web/2014/06-140320-c1>



Innovative Geothermal Heating at Novartis

(Novartis, March 25, 2014)

Novartis is installing an innovative geothermal heating concept in three of its buildings. The energy-friendly heating is known as thermal energy storage, consisting of extracting the heat in summer and storing it in dense limestone some 220 meters deep in the ground for the next winter. This single closed system provides all the heating and cooling required for the new buildings and relies on a heat pump. Chris Davidson, chief technical officer of GI Energy, comments the heating systems, "They're incredibly efficient, enable a substantial reduction in emissions and they make long-term financial sense." The first Novartis building where this novel system comes into operation will open in mid-2014.

<http://swissinnovation.org/news/web/2014/06-140325-46>

Processing Wet Biomass to Bio Gas

(PSI, March 28, 2014)

Only recently the test facility for the examination of energy harvesting out of wet biomass at the PSI was inaugurated. The plant, which will be housed in a shipping container, is designed to produce synthetic bio gas out of manure, sludge and algae. These kind of feeds can be found all over the world and could therefore help many countries to become energy independent. Up to now, wet biomass was not processed, as an efficient method for its conversion was missing. PSI is collaborating with EPFL, Empa and the University of Applied Sciences Rapperswil in the project SunCHem, which focuses on assessing the technological-economic feasibility of using algae for energy purposes.

<http://swissinnovation.org/news/web/2014/06-140328-d9>

2014 CCES Conference

(CCES, March 31, 2014)

The Competence Center Environment and Sustainability (CCES) recently hosted its conference themed "Research, Education, and Dialogue for Environment and Sustainability – Achievements and Challenges", providing a platform for disseminating information and dialogue about the progress made over the last three years by its research groups. Moderated by René Schwarzenbach, the renowned environmental chemist and current Chairman of the CCES Steering Board, achievements within projects so far were highlighted followed by their respective outlook. In addition there were interactive poster and networking sessions. The projects, which have received over CHF 15 million in funding in total, have produced work that has been published in over 350 peer-reviewed publications in 2011-2013.

<http://swissinnovation.org/news/web/2014/06-140331-e9>

Ice-Flow Model Explains Accident 88 Years Ago

(ETH Zurich, February 13, 2014)

Thanks to glaciologist Martin Funk of ETH Zurich, we might now know what actually happened to the four young men who disappeared in the Bernese Alps while on a ski tour in 1926. Together with a mathematician from the Free University of Berlin, Funk developed a computational model that can calculate glacier speed, growth, and shrinkage over time, therefore enabling the reconstruction of the likely chain of events. Publishing their findings in the latest Journal of Glaciology, the creators of the model are optimistic that it could potentially help solve other disappearance cases involving glaciers, like that of a US military aircraft that crash-landed in the Alps in 1946.



<http://swissinnovation.org/news/web/2014/12-140213-55>

7. Engineering / Robotics / Space

Swiss Companies Win Big at Machine-to-Machine Challenge

(AlpICT, March 10, 2014)

Two Swiss companies won prizes from this year's Machine-to-Machine (M2M) Challenge at the Mobile World Congress in Barcelona. EveryCook won the first place in the Consumer Electronics & More category as well as obtained the title for "M2M Innovator of the Year". EveryCook's intelligent cooking device can turn raw food into a cooked, ready-to-eat meal and notifying users of the ingredients needed for a particular recipe and telling them that their meal is ready. The winners of the Mobility category were swiss1mobile AG and Carlsberg for their "M2M mybeer automatic tank fill solution" that





can measure beer tank values, fill stand, temperature, and pressure. These values are transmitted to restaurants and Carlsberg's central portal. Overall, the winning entries of this year's M2M Challenge embody 'smarter' daily life technologies in the area of machine-to-machine communication.

<http://swissinnovation.org/news/web/2014/00-140310-af>

Adaptive Robot Uses 3D Printing for Measurement of Elasticity

(ETH Zurich, February 04, 2014)

ETH Zurich researchers have developed a robot that can ascertain the temperature and elasticity of objects – and adapt independently to various ranges in the process. The robot developed by the researchers essentially works with a camera, a mathematical algorithm and an integrated 3D printer that uses hot glue. The printer and camera are secured to a metal encasing that can move like a head in any direction with the help of a robotic arm. In order to investigate the elasticity of an unknown object, the robot produces rods of various thicknesses from hot glue. It picks up the finished rods and presses them against the object to be examined. The camera takes pictures of the curvature of the rod. The software evaluates the images and determines the elasticity of the object.

<http://swissinnovation.org/news/web/2014/07-140204-51>

Amputee Feels Through Bionic Hand

(EPFL, February 05, 2014)

Researchers at EPFL and SSSA (Italy) have developed a bionic hand that can be wired to an amputee's arm, allowing him to feel what the hand is touching. Sensors on the hand convert electrical signals into nerve impulses that are transmitted to four surgically-implanted electrodes in the upper arm. Mr. Sørensen, the first amputee to test this technology, said he could feel how hard he was grasping an object and its properties, such as hardness and shape. The initial test was only a clinical trial, but further development will hopefully bring this technology to widespread use.

<http://swissinnovation.org/news/web/2014/07-140205-0a>

New Swiss Cubesat

(EPFL, February 17, 2014)

ETH Zurich and EPFL are developing a new cubesat, named CubETH, after the success of SwissCube. Cubesats are tiny satellites designed from inexpensive components that allow cheaper access to space. The new satellite will test technologies for high-accuracy navigation using u-blox GPS receivers. These receivers are used in cell phones, but haven't been tested in space. High accuracy navigation with cubesats will enable future constellations of satellites to perform advanced scientific tasks in space. CubETH will also carry a sensor to measure atmospheric composition as yet another test of an inexpensive satellite sensor.



<http://swissinnovation.org/news/web/2014/07-140217-f3>

Bern's Lead in Planetary Research Confirmed

(University of Bern, February 19, 2014)

The European Space Agency (ESA) has approved the industrial implementation of the CHEOPS (CHaracterizing ExOPlanet Satellite) mission led by the University of Bern. It also selected the "PLATO" (PLANetary Transits and Oscillations of stars) M-class mission. Following the selection of the National Center of Competence in Research (NCCR) "PlanetS" by the Swiss Federal Council, these decisions confirm Bern's leading role in space and planetary research. These three large projects are closely linked to one another. "CHEOPS" and "PLATO" are satellite missions that deliver data; "PlanetS" coordinates the scientific work of researchers, which analyze the data from space missions. After the discovery of numerous exoplanets, the goal now is to determine their physical and chemical properties to better understand how planetary systems form and develop, and whether they can support life.

<http://swissinnovation.org/news/web/2014/07-140219-98>

Real Walking in a Virtual Environment

(ETH Zurich, February 20, 2014)

A system called ReWaVE, being developed at ETH Zurich, represents significant advancement in the field of virtual environments. Using a head-mounted display (HMD) connected to a laptop carried on a frame, the system conveys the sense of real walking, partly because the user is really walking around inside a physical space. The HMD has a position-measuring device that points toward the ceiling, where reference marks are posted to allow the algorithm to translate real position into virtual position and movement. To enable exploration of a virtual environment larger than the user's physical environment, some redirection tricks are built into the algorithm. Obvious applications for the system are in architecture and industrial engineering.

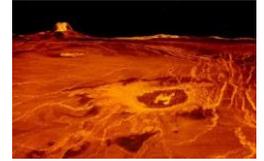
<http://swissinnovation.org/news/web/2014/07-140220-0d>



Simulation Explains Surface Structures on Venus

(ETH Zurich, February 21, 2014)

The inhospitable surface of the earth-like planet Venus features structures that may have been formed by mechanisms that are also found inside the Earth, as revealed by computer simulations conducted at ETH Zurich. The surface of Venus is over 400 degrees Celsius and the air pressure is almost 100 times higher than on Earth. Although Venus seems geologically “dead”, it features scar-like, ring-shaped structures not found on Earth, called novae and coronae. Simulations have recreated these surface structures and provide a plausible explanation for their formation. The results have been published in *Earth and Planetary Science Letters*.



<http://swissinnovation.org/news/web/2014/07-140221-ea>

Research Leads to Improved Safety Measures in Trains

(EPFL, March 05, 2014)

Thanks to a study conducted by the EPFL Transportation Center on behalf of the Swiss Federal Railways (SBB), new safety measures have been implemented to combat flying ballast issues and improve track safety. The study, which focused on the phenomenon of ballast projection in cold weather, showed that certain tracks in the country were more affected than others likely due to changes in ambient temperature as trains enter warmer regions or tunnels. Research into the wagons and track levels have also led to SBB's implementation of a systematic incident reporting system and recommendations to replace certain tracks as SBB strives to guarantee maximum safety for its approximately one million daily passengers.

<http://swissinnovation.org/news/web/2014/07-140305-e3>

Safer Driving with Emotion Detectors

(EPFL, March 14, 2014)

Scientists at the EPFL's School of Engineering, in collaboration with PSA Peugeot Citroën, have been developing a facial detection device that can interpret drivers' facial expressions using an infrared camera fixed behind the steering wheel. Irritation in particular has been known to lead to more aggressive and inattentive driving which can cause dangerous behavior on the road. To address this, the EPFL's Signal Processing 5 Laboratory has developed a device that is able to analyze facial expressions. A fatigue detector was also incorporated into the project to serve as an indicator of driver comfort and safety. Following tests of prototypes, the scientists are confident that their device will have promising safety applications as they plan to further develop the project and increase the capabilities of their device.

<http://swissinnovation.org/news/web/2014/12-140314-7e>

Enhancing the Transparency of the 3D Printing Sector

(ETH Zurich, March 31, 2014)

The ETH spin-off Additively.com aims at bringing more transparency to the crowded 3D printing sector and help customers finding the right provider for their requirements. In the booming 3D printing market it has become increasingly difficult to select adequate printing methods and obtaining bids. Additively.com therefore engages in the role of a consulting company that acts at the junction between the demand and supply side of 3D printing products. An earlier study conducted by the two founders indicated that the price differences for printing the same part differed in some cases by a factor of 28. “This is in customers' interest, who save a lot of time and money thanks to our service,” says Rahm with conviction.

<http://swissinnovation.org/news/web/2014/12-140331-9f>

8. Physics / Chemistry / Math

CERN's Long-Term Future

(CERN, February 06, 2014)

“We need to sow the seeds of tomorrow's technologies today, so that we are ready to take [sic] decisions in a few years' [sic] time”. With that, CERN's Director for Accelerators and Technology Frédéric Bordry represents for the world's leading particle physics laboratory what has always been a priority: long-term planning. The technologies mentioned are part of a large-scale upgrade to increase luminosity - the ability of a particle accelerator to produce the required number of interactions for a given experiment. Currently, the High Luminosity Large Hadron Collider (HL LHC) is top priority, but exploratory studies for future long-term projects involving the Compact Linear Collider (CLIC) and a new generation collider under the Future Circular Colliders (FCC) program are already underway.



The results of these studies will be used to evaluate the feasibility of future machines, a topic which will be discussed at the next European Strategy update in 2018/19.

<http://swissinnovation.org/news/web/2014/08-140206-5e>

Improved Zinc Recycling

(PSI, February 20, 2014)

Zinc is an important metal in many products, either as part of brass and bronze, or directly in household goods. It is also used to galvanize steel, and this galvanized steel is a major source of recycled zinc. The steel is broken down in a furnace into a powder that must then be cleaned to extract zinc oxide. Current processes use a high-temperature furnace. However, scientists at the Paul Scherrer Institute have devised a new method that uses concentrated solar power to extract the zinc from the steel powder more efficiently. The powder is heated to 1300 degrees Celsius, where other elements are separated out leaving few impurities in the zinc oxide.

<http://swissinnovation.org/news/web/2014/08-140220-d6>

Using Gold Molecules for Organic Light Emitting Diodes

(University of Zurich, February 24, 2014)

Currently the most energy-efficient organic light emitting diodes (OLED) are being manufactured with the noble metals platinum and iridium. These rare metals however, increase the costs of OLEDs vastly, which prompted researchers from the University of Zurich to develop new gold molecules as a promising alternative. With decreasing manufacturing costs through the use of the cheaper gold molecules possible applications of OLEDs in smartphone screens, laptops and TV sets start to emerge. After the successful developing of stable gold molecules, which are suitable for use in OLED, the scientists are now working on establishing these values in OLEDs and to prove their superior performance.

<http://swissinnovation.org/news/web/2014/08-140224-73>

Analyzing Polymer Mechanics Using a Microscope

(University of Basel, March 04, 2014)

Researchers at the University of Basel have shown how an atomic force microscope can be used to investigate the mechanical behavior of polymer chains. They were able to pull a polymer chain off of a gold surface and measure the forces as each successive polymer chain link was lifted. Consequently, they were able to verify that this type of mechanical interaction experiences essentially no lateral friction. The new research method will be applicable to biology and chemistry too.

<http://swissinnovation.org/news/web/2014/08-140304-1c>

Programmable Materials with Controlled Vibrations

(EMPA, March 05, 2014)

Researchers from ETH Zurich and Empa have presented an acoustic metamaterial, in which the vibration characteristics can be accurately controlled. In the initial demonstration, a sheet metal strip was fitted with piezoelectric actuators that control the stiffness of the material. This allows, for example, certain frequencies to be transmitted along the strip while cutting out other frequencies. This new technology has the possibility of changing how machines and factories are constructed by making them adaptable to internal vibrations.

<http://swissinnovation.org/news/web/2014/08-140305-c0>

Novel Materials with Fast Magnetic Change

(PSI, March 06, 2014)

Researchers at ETH Zurich and the Paul Scherrer Institute have discovered a novel material, TbMnO₃, that changes its magnetic properties much faster than the materials currently used in hard disk drives. This faster change would allow for faster memory storage. Furthermore, the changes are effected using an electrical field instead of a magnetic field, making it easier to control in a computer. The researchers used x-ray laser flashes to see the dynamics of the magnetic change in real time.

<http://swissinnovation.org/news/web/2014/08-140306-9d>

9. Architecture / Design

“Gateway to Knowledge” in Lausanne

(EPFL, March 13, 2014)

Stepping into the insurance agency Vaudoise's new branch in Épalinges, Lausanne promises to be an experience unlike any other. Located near the first stop of the Metro line in the heart of the Biopôle Science Park, the Porte des



Savoirs is an interactive installation that combines the insurance company's commitment to promoting innovation, architecture, and culture while addressing the challenge of giving digital information a literal physical reality. None other than the EPF Lausanne and the University of Art and Design Lausanne (ECAL) were behind this "Gateway to Knowledge" which consists of impressive LED screens and cleverly installed mirrors that display and reflect the latest developments of the University Hospital of Lausanne, University of Lausanne, EPF Lausanne, and ECAL respectively. An experimental, informative, and fun space, the Porte is a stunning display of how knowledge transfer and the digital age intersect.



<http://swissinnovation.org/news/web/2014/09-140313-56>

Presenting Densified Wood Objects in Paris

(EPFL, March 28, 2014)

Researchers from EPFL and ECAL Laboratories presented densified wood objects at the Museum of Decorative Arts in Paris. They show the vast potential of this densification of softwood, a process that allows to independently control temperature, heat, humidity and the applied pressure on the wood piece in the mold. With this method one is able to radically change the wood's structure, as well as its properties regarding strength, textures and appearances. Five designers were invited to try this material, which resulted in several stunning design objects. The researchers are now trying to focus on industrializing the process and integrate densified wood into daily life.



<http://swissinnovation.org/news/web/2014/09-140328-ee>

10. Economy, Social Sciences & Humanities

Mobile Payments Over SMS

(20min, February 09, 2014)

The financial service provider SIX aims to enable mobile payments. In cooperation with several small banks, the provider is currently testing a system that allows for money transfers over SMS. SIX estimates that the product will be available in the last quarter of 2014. To use the service, a customer opens a separate account that can be charged with money. The account is linked to the phone number. To make a payment, a SMS with the phone number of the recipient and the amount of money is made, and then the payment is processed automatically.

<http://swissinnovation.org/news/web/2014/10-140209-3f>

Brownian Motion Correlated to Exchange Rates

(ETH Zurich, March 13, 2014)

The swings in market prices and exchange rates have the same foundations as molecule movements in physics. This has been demonstrated by a team of scientists from Switzerland and Japan. Brownian motion, the name given by scientists to the microtwitching of particles in fluid, results from the impact of the universal thermal agitation of the individual molecules in the fluid. The renowned French mathematician Louis Bachelier observed back at the beginning of the 20th century that there were parallels between this random walk behavior and exchange rates. However, it is only now that Didier Sornette, Professor of Entrepreneurial Risks at ETH Zurich together with colleagues from Japan, has been able to demonstrate exact correlations between the two.

<http://swissinnovation.org/news/web/2014/10-140313-18>

Swiss Start-up Launches Humanitarian Social Network

(AlpICT, February 12, 2014)

Goodwall, an online platform designed to encourage and inspire humanitarian causes, was recently awarded the Accenture's People's Choice Award shortly after its official launch in early February. Claiming not to be just another social network, the platform seeks to foster "social education" by teaming up with schools and universities worldwide to help their students build "humanitarian CVs". In this way, the Geneva-based start-up hopes to highlight inspirational stories related to key issues such as Human Rights, Conflict, Development, and Environment through user-uploaded text, photos, or videos. Founded by Marcus Bonalumi, Omar Bawa and Taha Bawa, Goodwall will facilitate collaborations amongst its members as it strives to promote concrete actions to improve humanity.

<http://swissinnovation.org/news/web/2014/12-140212-39>



11. Technology Transfer / IPR / Patents

Biognosys and Stagend.com Awarded CTI Start-up Label

(startupticker, February 12, 2014)

Two new CTI Start-up Label companies, Biognosys and Stagend.com, have been selected by the Certification Board, composed of seasoned entrepreneurs and experts. Biognosys' "targeted proteomics" can quantify proteins from any biological sample with unbeatable precision and speed. The solution is based on a novel mass spectrometric technology that allows simultaneous measurement of thousands of proteins in one sample and storage of the full information in a digital protein map, used to monitor health, detect the onset of diseases, and discover biomarkers. Stagend.com provides an online platform that enables anyone organizing an event (e.g. festivals, corporate events, weddings) to publish a 'booking offer', for which artists can apply. The matching artist and event organizer can negotiate and close the deal directly on the site.

<http://swissinnovation.org/news/web/2014/11-140212-51>

Start-up Monitor Looks at Investment Needs

(startupticker, February 14, 2014)

A non-profit initiative called the Swiss Start-up Monitor has analyzed the investment-seeking status of 376 Swiss start-ups. About one-third (125) are currently looking for investment or holding talks with investors. The majority (58%) of the fund-seeking start-ups are two or three years old. More start-ups are created in the Zürich and Lake Geneva regions than in other parts of Switzerland, but a smaller proportion of them are seeking funding. By contrast, two-thirds of start-ups in Ticino, and one-half of start-ups in Northwest Switzerland, are seeking investment. The patterns suggest there may be a funding gap for start-ups in those regions, as well as for companies that are two to five years old.

<http://swissinnovation.org/news/web/2014/11-140214-13>

ETH Zurich Launches Founders Community

(ETH Zurich, February 20, 2014)

ETH Zurich spin-off founders now have a platform through which they are able to communicate and network with their peers thanks to the recent launch of the Founders Community. Its kick-off event benefited from a lively atmosphere and excellent attendance as participants discussed their projects and topics such as how best young talents should navigate the business world once their ideas have been developed enough to become a marketable product. The importance of mentorship, networking, and exchanging experiences were amongst the principal reasons for the launch of the Community, whose over 350 members will benefit from being able to contact each other via an online portal in addition to weekly lunch seminars and other social events. In this way, the ETH Zurich contributes towards Switzerland's strengths in innovation by promoting ideas and knowledge transfer.



<http://swissinnovation.org/news/web/2014/11-140220-76>

Spark Award 2014 Goes to Memristors

(startupticker, March 10, 2014)

ETH Zurich has awarded its Spark Award 2014 for the most promising invention to a team that develops "memristors" – new electrical building blocks that could make data storage and data transfer more efficient. The new memristors will enable the development of memory elements for future mobile devices with lower voltage, lower power consumption and a higher storage density. In the long run memristors could replace transistors in all kinds of electronic devices. The Spark Award is one element of ETH's strategy to strengthen valorization of research. Two other important elements are Pioneer Fellowships and the ieLab that supports researchers who are planning to start a company. Results have been impressive: researchers at ETH Zurich filed 103 patent applications in 2013; 24 spin-offs have been founded.

<http://swissinnovation.org/news/web/2014/11-140310-3f>

Shaping the Western Switzerland Hub

(EPFL, March 28, 2014)

EPFL and the western cantons of Switzerland, which comprise Vaud, Valais, Fribourg, Neuchâtel and Geneva, have joined forces for the implementation of a decentralized Western Switzerland Hub. The future National Innovation Park project aims to promote Swiss scientific and technological innovation by creating parks to accommodate companies. Nevertheless, the two Federal Institutes of Technology will remain the main hubs for the Swiss net-



work. The decentralized Western Switzerland Hub will include four satellite sites that are being developed in Neuchâtel (Microcity), Sion (Energypolis), Fribourg (BlueFactory) and Geneva (Campus Biotech), besides the main campus at EPFL in Lausanne.

<http://swissinnovation.org/news/web/2014/11-140328-df>

12. General Interest

Youth Unemployment Rate Decreased to 3.4%

(20min, March 07, 2014)

In February, there were 149,259 people registered as unemployed in Switzerland. Compared to the previous year, this is an increase of 3,000 persons. However, compared to the previous month, there was a reduction of 4,000 people registered at the unemployment insurance centers. While the unemployment rate remains constant at 3.5%, the youth unemployment of those aged 15 to 24 decreased from 3.6% to 3.4%.

<http://swissinnovation.org/news/web/2014/01-140307-a4>

Zurich Among the Top for Quality of Life

(20min, February 19, 2014)

Zurich is once again on the second place for the highest quality of life. In the annual comparison study the consulting company Mercer has examined 223 major cities worldwide and selected Vienna to be the city with the highest quality of life. Auckland, Munich and Vancouver rank 3, 4 and 5 in the study, which uses 39 criteria to assess the cities. These factors include among other economic and social aspects, personal security, education or transport services. Mercer expert Christa Zihlmann claims that the differences between the top five are minimal and Zurich's second place can be attributed to the good international connections through the airport, excellent public transport, infrastructure facilities and the variety of restaurants.

<http://swissinnovation.org/news/web/2014/12-140219-8c>

Removing Trashcans Reduces Trash

(Tages Anzeiger, February 11, 2014)

When the Zurich Public Transport (VBZ) announced last August that they would be removing all the trashcans in their vehicles, passenger protests were manifold. Having implemented this policy for half a year now, the conclusion is that the vehicles in fact became cleaner. Even the free newspapers aren't thrown away as much as before, now they are replaced back to their original dispenser boxes. While the VBZ hopes to save on cleaning costs in the longer term thanks to the reduced trash, they still have a cleaning team that removes the trash three times a day in every vehicle.



<http://swissinnovation.org/news/web/2014/12-140211-ad>

Usage of Cars Decreases While Travel Time Increases

(EPFL, March 24, 2014)

EPFL researchers have examined travel behavior data from the cantons of Geneva and Vaud, that was gathered by the Federal Office of Statistics (FOS). It seems that inhabitants are increasingly forgoing their cars for public transportation, walking or cycling. The number of kilometers they are traveling has not changed, but it is taking them longer to get there, namely 1.5 hours per day in average. In both cantons there are clear trends to travel from home to work less by car and more by foot, bicycle or motorbikes. However, the success of the improved public transport offer in some cantons leads to overcrowded lines at rush hour.

<http://swissinnovation.org/news/web/2014/12-140324-44>

13. Calls for Grants/Awards

Join: 4th Global Infrastructure Basel Summit 2014

(Global Infrastructure Basel, March 18, 2014)

Are you ready for a challenge? Recent estimates say that around 75% of the infrastructure that will be in use in 2050 doesn't yet exist. This means immense global infrastructure investment needs for decades to come, all in the context of the need for Climate Action, Sustainable Energy for All, and the post-2015 Agenda for Sustainable De-



velopment. The 4th Global Infrastructure Basel (GIB) Summit is tackling this challenge by laying the groundwork for the financing of economically, environmentally and socially sustainable infrastructure. GIB is the leading platform for Sustainable Infrastructure Financing, and we are pleased to report strong progress since last year in the introduction of Sustainable Infrastructure as a new asset class. Accordingly, this year's topic is "Mainstreaming Sustainability in Infrastructure Financing and Investment". Come join investors, developers, policy makers and solution providers on 21-22 May 2014 at the Congress Center Basel in Switzerland and help us meet the challenge. Our network members and associated partners will receive a discount of 40% on their GIB Summit 2014 attendance fees. GIB Summit 2014 Registration: www.gib-foundation.org/register/ (Discount code for the 40% discount: GIB2014_rr2gy)

<http://swissinnovation.org/news/web/2014/13-140318-0c>

Call: Swisscom Business Award on ICT Innovation

(startupticker, February 13, 2014)

The Swisscom Business Award honors Swiss companies and institutions that have implemented ICT projects with exemplary character. The focus is on Swiss companies whose ICT solution simplify business processes, increase efficiency and thus achieve competitive advantage. The total prize money amounts to CHF 100'000. Registration deadline: March 31, 2014.

<http://swissinnovation.org/news/web/2014/13-140213-a6>

Call: Swiss Startups Wanted

(venture kick, February 12, 2014)

Venture kick is a philanthropic funding model initiated to support Swiss startups with enough funding to start their entrepreneurial success. Successful projects passing all three stages will receive CHF 130'000 in start capital. Every month 8 projects are selected to present their idea in front of a jury, the best 4 will move to the second of overall three stages. In the last stage 2 out of 4 showcasing startups will receive CHF 100'000 funding.

<http://swissinnovation.org/news/web/2014/13-140212-8e>



Call: Entrepreneur Of The Year

(startupticker, February 28, 2014)

The consulting company EY honors successful entrepreneurs. Entrepreneurs from all fields can apply for the traditional Entrepreneur Of The Year Award, provided their company occupy at least 40 employees. For start-ups, the minimum number of employees amounts to five. Closing date for applications is April 30.

<http://swissinnovation.org/news/web/2014/13-140228-d6>

Call: Largest Social Entrepreneurship Award of Switzerland

(startupticker, February 27, 2014)

For the fourth time the Social Entrepreneurship Initiative & Foundation (SEIF) awards their prize which honors young companies and organizations who dare to tackle social problems. SEIF supports people and teams, who find entrepreneurial answers and innovative ideas to overcome social problems. The price comprises CHF 10'000 for the best project in each category. The deadline for applications is April 30.

<http://swissinnovation.org/news/web/2014/13-140227-a3>



Call: Startup-Battle at the Startup Fair 2014

(startupticker, March 18, 2014)

Startup Fair 2014 is looking for startups coming from the sectors Internet-/Mobile-based solutions, HighTech / Science projects and Gamification startups. The best 10 entries from each of the three areas are invited to a qualifying pitch, where they introduce their projects to a jury. The pitches are recorded and are expected to be aired on TV. From a total of 30 qualifying pitches, the jury determines the 10 best, which contest the final at the Startup Fair 2014. The 10 finalists will be professionally prepared for the big show and will undergo mandatory pitch and media training in Zurich starting 2-3 days before the final. Application deadline: April 15, May 15 and June 15 (depending on category).

<http://swissinnovation.org/news/web/2014/13-140318-15>

Call: MNE 2014 Start-up Contest

(Micro and Nano Engineering, March 31, 2014)

Around the Micro and Nano Engineering (MNE) Conference this September, the organizers offer a Start-up contest for companies founded after 1 January 2011. The aim of the contest is to promote innovation and entrepreneurship in the fields covered by the MNE conference. The finalists are given the opportunity to present their start-ups to a



large audience during the conference, and they will be able to discuss their technologies and products with other experts in the field and with potential customers. Deadline is May 27, 2014.

<http://swissinnovation.org/news/web/2014/13-140331-87>

Call: Outstanding and Easy Understandable Publications

(Akademien der Wissenschaften Schweiz, March 28, 2014)

The Swiss Academies of Arts and Sciences aim to promote the dialogue between science and society. They generously support journalists and researchers who increase the accessibility of complex topics to a wide audience. The "Prix Média" of the Swiss Academies of Arts and Sciences is awarded annually to publications of outstanding quality that are easily understandable and have been published in a Swiss medium appearing on a regular basis. The price of CHF 10'000 is awarded in each of four disciplines, comprising human and social sciences, natural sciences, medicine and engineering. Full consideration is given to publications that appeared between June 16, 2013 and June 15, 2014. The deadline for application is June 15, 2014.



<http://swissinnovation.org/news/web/2014/13-140328-0c>

Call: Swiss ICT Award 2014

(startupticker, March 31, 2014)

The 10th anniversary of the Swiss ICT Award focuses on the concept of "Oscars of Swiss computer science". IT is an essential part of many products and services today. In some cases it enables these kind of products in the first place. Therefore, the contest is not only targeting IT companies, but any company that has achieved something special thanks to IT. Participation is open to all companies and organizations with a strong foothold in Switzerland. Deadline is May 31, 2014.



<http://swissinnovation.org/news/web/2014/13-140331-57>

Upcoming Science and Technology Related Events

Zurich Meets New York Festival Coming Up

(ETH Zurich, March 20, 2014)

This May the Big Apple will host the "Zurich meets New York" festival, which aims at promoting the cultural and scientific interchange between the two unique cities. This project is organized by ETH Zurich, the University of Zurich, the city of Zurich, the Swiss General Consulate in New York, as well as the Zurich University of the Arts as a cultural partner. From May 16-23 New York will host prominent figures from both countries working in fields of research and industry, who convene to hold public discussions on cities of the future, black holes, complex systems, cognitive computing, data science and the management of urban traffic flows.



<http://swissinnovation.org/news/web/2014/00-140320-dd>

Geneva Health Forum 2014: Global Health

April 15-17, 2014

<http://ghf.globalhealthforum.net>

Global Health

Geneva

ETH Entrepreneur Club – Lunch Pitch

May 6, 2014

<http://www.entrepreneur-club.org/>

Entrepreneurship / Startups

Zurich

Human Genome Meeting 2014

April 27-30, 2014

www.hgm2014-geneva.org

Life and Health Sciences

Geneva

EPFL - MicroNanoFabrication Annual Review Meeting

May 6, 2014

<http://blogs.epfl.ch/article/36925>

Micro & Nano Fabrication Techniques

EPFL, Rolex Learning Center



Society of Environmental Toxicology and Chemistry

May 11-15, 2014

<http://basel.setac.eu>

Environmental Sciences

Basel

Early Stage Drug Development

May 13-15, 2014

<http://mot.epfl.ch/cms/site/mot/lang/en/cas/program-module5>

Drug development

Lausanne

Swiss NanoConvention 2014

May 21-22, 2014

www.swissnanoconvention.ch/2014

Nanotechnology

Brugg, AG

Global Infrastructure Basel

May 21-22, 2014

<http://www.gib-foundation.org/>

Sustainability in Financing and Investment

Basel

Berner Start-up Evening

May 22, 2014

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

Entrepreneurship / Startups

Bern

MedTech Business

June 2-6, 2014

<http://www.medtechbusiness.usi.ch/>

Marketing & Sales

Lugano

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

CIG Symposium

June 12-13, 2014

<http://www.unil.ch/cigsymposium/page60108.html>

Biology

Lausanne

11th IASTED Conference on Biomedical Engineering

June 23-25, 2014

www.iasted.org/conferences/cfp-818.html

Biomedical Engineering

Zurich

TCI Conference «High Tech and Clusters»

June 25-27, 2014

<http://www.tcihightech2014.org/>

Business and Technology

Bern

Startup Fair 2014

July 3, 2014

<http://www.startupfair.ch/de/startupfair-2014/>

Startups

Zurich

Science Week - Naturwissenschaften erforschen

August 4-8, 2014

<http://www.project.zhaw.ch/de/science/science-week.html> Bio-chemistry

Wädenswil

20th International Mass Spectrometry Conference

August 24-29, 2014

www.imsc2014.ch

Analytical Chemistry

Geneva

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