



Science-Switzerland, April - May 2014

News on Swiss science, technology, education and innovation

Table of Contents

1. Policy.....	2
2. Education	2
3. Life Science / Health Care.....	4
4. Nano / Micro Technology / Material Science	8
5. Information & Communications Technology.....	9
6. Energy / Environment.....	11
7. Engineering / Robotics / Space	15
8. Physics / Chemistry / Math.....	16
9. Architecture / Design	18
10. Economy, Social Sciences & Humanities	19
11. Technology Transfer / IPR / Patents	20
12. General Interest.....	21
13. Calls for Grants/Awards	21
Upcoming Science and Technology Related Events	22

US and Switzerland Top World Competitiveness Ranking

(startupticker, May 29, 2014)

For the second consecutive year Switzerland has reached the 2nd place in the 2014 overall competitiveness ranking performed by the IMD World Competitiveness Center, which covers 60 countries. The ranking shows that Switzerland is still considered a competitive and resilient nation. However, there are growing concerns in terms of its labor market as well as the country's general attractiveness. The first place went to the USA, whose vigorous employment and private consumption impressed the leading global executives in charge of ranking the countries. Switzerland was followed by Singapore (3rd) and Hong Kong (4th), both countries characterized by a strong export sector and a favorable business environment.

<http://swissinnovation.org/news/web/2014/00-140529-65>

New Swiss Solar Plane Prepares for World Tour

(swissinfo, May 14, 2014)

Five years and eight world records after unveiling the prototype, the Solar Impulse team has introduced the Si2 – a single-seat solar plane scheduled to fly around the world in 2015. Test flights are imminent, followed by training flights over Switzerland. Pilots Bertrand Piccard and André Borschberg presented the plane at the Payerne Air Force base. Its wingspan has been extended to 72 meters and its weight increased to 2,300 kg to enable the aircraft to stay airborne for up to five days, essential for crossing the world's oceans. The Si2 is the most energy-efficient airplane ever designed, and the only airplane with unlimited endurance. It demonstrates the importance of the pioneering spirit and highlights the need for clean technologies and renewable forms of energy.



<http://swissinnovation.org/news/web/2014/00-140514-77>

4 Swiss Startups Selected for the MassChallenge Competition in Boston

(swissnex Boston, May 22, 2014)

John Harthorne, founder and CEO of MassChallenge, announced on May 21 the 128 finalists for the MassChallenge 2014 Accelerator Program. Among them are four Swiss startups: 1Drop Diagnostics, G-Therapeutics, noonee® and ProtonMail. MassChallenge, which is based in Boston, is the world's largest accelerator and offers a unique 4-month program, which provides the finalists with a large mentorship network and various workshops to boost the entrepreneurs in their project. In addition, three of the four MassChallenge finalists are part of the Venture Leaders Program, which is co-organized by swissnex Boston, the Outpost of New-York and Venturelab. The School of Management Fribourg is one of the official sponsors of MassChallenge and is very proud to count on 4 Swiss startups for this new edition.



<http://swissinnovation.org/news/web/2014/00-140522-6a>



1. Policy

2013: CHF 819 Million Invested in Research by SNSF

(swissinfo, May 05, 2014)

According to the recently released annual report by the Swiss National Science Foundation (SNSF), a record CHF 819 million (\$ 933 million) was invested in basic research last year involving approximately 14,000 researchers and 3,400 research projects. Of these projects, 40% were in biology and medicine, 33% were in mathematics, natural, and engineering sciences, and the remaining in humanities and social sciences. The SNSF derives its income from Swiss state contributions and is proud of having been able to address its goals of promoting young scientists, improving research infrastructures, and financing long-term medical studies according to the president of the SNSF National Research Council. However, it remains conscientious with respect to the coming years, with a particular emphasis on developing young scientific talents.

<http://swissinnovation.org/news/web/2014/02-140505-a7>

Swiss Federal Council Increasing the Quality of Medical Services

(Federal Administration, May 14, 2014)

The Swiss Federal Council is currently seizing issues in the quality of medical services and security of patients. In order to increase the performance of these two fields, the Federal Council has handed in a draft law, which envisages the launch of Swiss-wide quality programs, the consequent assessment of medical services and the creation of a national center for this purpose. The aim is to optimally coordinate the present private and public initiatives in these fields. Furthermore, the reinforcement of the medicare quality tries to tackle the number of non-effective, non-efficient and unnecessary therapies, expensive false medical care and thereby increase the quality of the overall medical services.

<http://swissinnovation.org/news/web/2014/01-140514-ff>

Part-Time Workforce Increases

(Federal Administration, April 25, 2014)

A recent statistical study shows that the Swiss part-time workforce is increasing more rapidly than the full-time workforce. In Europe, only the Netherlands has a higher proportion of part-time workers. Men are increasingly working part-time, and for both genders family reasons are most often cited as the reason for working part-time. Differences also exist between management and non-management employees, with management employees less likely to work part-time. In all, Switzerland sees the highest proportion of economic participation of its workforce.

<http://swissinnovation.org/news/web/2014/01-140425-84>

2. Education

ETH Zurich Develops High Quality Online Courses

(ETH Zurich, May 14, 2014)

With the advent of massive open online courses (MOOCs), many universities have jumped the bandwagon and started offering their own online courses, available for free to anyone with an internet connection. In a similar vein, as of 2012, ETH Zurich Rector Lino Guzzella launched a two-year project aimed at using the internet to improve the quality of the existing curriculum at the university. Hence, TORQUE (Tiny, Open-with-Restrictions courses focused on Quality and Effectiveness) was born. TORQUE is currently being offered by four ETH professors and provides supplementary material to students already enrolled in their lecture courses at ETH such as animated slides, exercises, and online quizzes. Andreas Reinhardt of the Educational Development and Technology unit at ETH hopes that TORQUE will intensify communication between professors and students by helping students come to meetings with their professor prepared thanks to the materials available online. This new learning culture that TORQUE provides is exciting, but will be subject to evaluation by Reinhardt's team by the end of 2014.

<http://swissinnovation.org/news/web/2014/02-140514-04>

Switzerland Among Leading Countries for Continuing Vocational Training

(Federal Administration, May 29, 2014)

Switzerland is one of the leading countries in international comparison in terms of companies supporting continuing vocational training (CVT). With a share of companies active in CVT of 81%, Switzerland is only slightly behind those in Austria and Sweden, where the share amounts to 87%. In Switzerland the gap between companies of different sizes offering CVT is relatively small with 78% of small enterprises and 95% of medium-sized enterprises being active in CVT. The participation rate of CVT courses supported by employers amounts to 46% in Switzer-



land, thereby lying slightly below the European average of 48% in terms of employee participation in training enterprises. Possible reasons could be related to the already high standard of vocational education and training, and/or the existence of private investment.

<http://swissinnovation.org/news/web/2014/10-140529-b2>

Multinational Sponsorship for Chair Appointment

(swissinfo, May 08, 2014)

Swiss-based food multinational Nestlé is to be allowed a say over the filling of two academic Chairs that it has sponsored at the Federal Institute of Technology in Lausanne (EPFL), it has been revealed. The firm will participate in the appointments committee for these two “Nestlé Chairs” and will also get a veto right. Each appointment has to be approved by Nestlé. This is according to a contract that has been seen by the Swiss news agency. The original deal between Nestlé and the EPFL dates back to 2006 and was understood to include that Nestlé would cooperate on the deciding of research topics but that the professors would have academic freedom. Nestlé pays CHF5 million (\$5.7 million) per Chair. After a sponsorship deal between the University of Zurich and UBS drew attention to the private funding of state-run universities, now both of Switzerland’s two federal technical colleges are in the spotlight.



<http://swissinnovation.org/news/web/2014/02-140508-a9>

U-Multirank Redefines International Higher Education Rankings

(ETH Zurich, May 13, 2014)

Traditional university rankings use a limited set of criteria and do not reflect the variety of educational and research environments. To remedy the situation, ETH Zurich researchers have developed U-Multirank, a new tool to compare universities internationally. A need was identified for a more comprehensive picture, beyond a one-dimensional university ranking, especially one taking diversity into account, e.g. covering not only large research universities, but also small, specialized colleges offering only bachelor's courses. U-Multirank users can select their own key ranking criteria, e.g. only publicly funded, multilingual, or only medium-sized institutions offering bachelor's and master's degrees, but no doctorates. This enables similar educational institutions to be compared. The detailed results obtained help users compare institutions based on their personal strategy and goals.

<http://swissinnovation.org/news/web/2014/02-140513-81>

New Executive Master's in International Oil and Gas Leadership

(Graduate Institute Geneva, May 14, 2014)

Geneva's Graduate Institute is Switzerland's premier school for world affairs and development studies, and the IFP School is France's leading research and development center focusing on the fields of energy, transport and environment. Together they have developed a master's program in international oil and gas leadership (IOG). The IOG has been designed to advance the careers of professionals working in the oil and gas industry or in related areas who wish to gain a broader view of the global industry. The part-time degree program comprises an introductory module and four modules each lasting two weeks. It will develop management skills that are critical for leading in both public and private sectors, e.g. corporate governance, strategy development, corporate and project finance, negotiation and dispute resolution.

<http://swissinnovation.org/news/web/2014/02-140514-21>

Classroom Dogs Improve Learning

(NZZ, May 28, 2014)

A handful of elementary schools in Switzerland are experimenting with having dogs in the classroom. The dogs are actively involved in some of the learning exercises, but their presence also helps motivate and calm students. This is a new movement; a professional association has existed for only one-and-a-half years and has forty members. Nonetheless, proponents see a benefit for the students. While, this experiment is being done informally in Switzerland, Austria has formalized the process that includes pedagogical courses for including dogs in the classroom. Critics warn that dogs are not a panacea, and only properly trained dogs with the appropriate demeanor should be used.

<http://swissinnovation.org/news/web/2014/02-140528-f4>

Making Dual Careers and Integration Work

(ETH Zurich, May 28, 2014)

An international conference entitled “Researchers on the move” is held at ETH Zurich in June 2014. Switzerland, especially Zurich is an attractive workplace for researchers, with ETH Zurich recruiting 50% of its workforce from abroad. The last 15 years however have seen new phenomena, such as researchers not willing to go abroad at



any price or women pursuing an equally important academic career as their husband. ETH Zurich competes for top talent scientists by offering all-round services before, during and even after newcomers take up their post. Apart from finding accommodation or organizing childcare, services also include job-hunting support for the partner. The remaining challenge is integration into Swiss society which will be tackled by setting up a Welcome Center for new scientists.

<http://swissinnovation.org/news/web/2014/02-140528-34>

Regional Disparities in Education

(Federal Administration, May 30, 2014)

Switzerland partially measures its competitiveness and innovativeness through the education level of its citizens. A study of 2012 data showed that the number of people with tertiary education degrees has been increasing over time, but urban areas saw more increase than suburban or rural areas. Some cantons, such as Geneva and Ticino had a relatively higher number of people with university degrees, but also had a relatively higher number of people without any education beyond the compulsory level.

<http://swissinnovation.org/news/web/2014/02-140530-1e>

3. Life Science / Health Care

Preventing Asthma by Having Microbes in Lungs

(University of Lausanne, May 22, 2014)

Researcher from the University of Lausanne have conducted a study on respiratory allergies and have discovered that exposing the sterile lungs of young mice to microbes will make them less susceptible to respiratory allergies than mice without microbe exposure. They have therefore concluded that there is a critical period during growth, where microbe exposure can influence the development and maturation of the immune system. The process of colonization and adaptation is developed in the first two weeks of the mice's lives. Some preliminary test on humans, have shown that there are significant parallels between mice and humans. A more thorough study on humans will show if such treatments might prevent Asthma.

<http://swissinnovation.org/news/web/2014/03-140522-44>

New Generation of Nanocapsules Target Cancer

(University of Fribourg, May 27, 2014)

Researchers at the University of Fribourg's Adolphe Merkle Institute (AMI) have developed a new kind of multivalent nanocapsule. These minicapsules can deliver a drug to diseased cells or organs without damaging other tissues in the body. They therefore enable active substances to be transported directly to the target site without overloading the rest of the body, which could greatly improve the treatment of cancer and inflammation. The research is part of the National Research Program "Smart Materials" (NRP 62), a collaboration between the Swiss National Science Foundation and the Agency for the Promotion of Innovation, and is published in ACS Nano. The AMI researchers created the new nanocapsules by integrating superparamagnetic iron oxide nanoparticles (SPIONs) into liposomes, and viewed them in their authentic form using state-of-the-art microscopy.

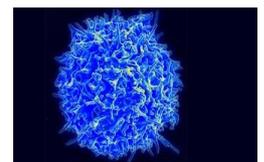
<http://swissinnovation.org/news/web/2014/03-140527-2b>

Innovative Technology to Boost Immunity and Treat Disease

(EPFL, May 20, 2014)

The start-up company Anokion, based at EPFL's Innovation Park, has developed technology for retraining white blood cells that holds promise for treating autoimmune, allergic, and various other diseases. Multiple sclerosis, type I diabetes and food allergies are caused by an abnormal immune response; white blood cells that attack their own body cells or overreact to external elements. The new technology may prevent such reactions, and potentially calm undesirable immune responses to many protein drugs used to treat hemophilia and cancer. Many therapeutic molecules that trigger immune reactions and are withdrawn after clinical trials, due to immunogenicity challenges, may thus be rehabilitated. A group of private investors has injected USD 37 million dollars into the company, and initial clinical trials are planned for 2017.

<http://swissinnovation.org/news/web/2014/03-140520-42>





Trauma Inheritance Shown in Mice

(ETH Zurich, April 14, 2014)

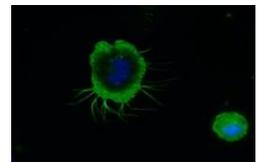
RNA molecules contain genetic information and are synthesized by enzymes that read DNA. Naturally found in large numbers in cells, microRNAs are short RNA molecules that have regulatory functions. Now, scientists at the ETH Zurich and University of Zurich have found that the effects of traumatic experiences can be passed down to future generations via alterations to microRNA in sperm. They discovered that mice in which traumatic stress was induced would have offspring that shared similar behavioral traits as them resulting from their trauma even though the offspring themselves were not exposed to any traumatic stress. The researchers, led by ETH Zurich Professor of Neuroepigenetics Isabelle Mansuy, concluded that this inheritance is attributable to an imbalance of microRNAs in sperm caused by the trauma, and are pursuing further theories concerning short RNAs in trauma inheritance in humans.

<http://swissinnovation.org/news/web/2014/03-140414-eb>

Cellular Changes in Microgravity

(University of Zurich, April 18, 2014)

The human body is adapted to Earth's gravity environment, and microgravity affects how the body operates. For example, the immune system changes, and astronauts often suffer from infections. Short-duration experiments have shown that immune system cells lose some of their important functions in microgravity. Now, a University of Zurich experiment traveled to the International Space Station with the "Cellbox" mission to test what happens to these cells over several days. This information will be useful for informing future long-duration space missions and for understanding the conditions that allowed life to appear on Earth.



<http://swissinnovation.org/news/web/2014/03-140418-20>

Dolphins' Use of Tools for Feeding

(University of Zurich, April 23, 2014)

New evidence from research at the University of Zurich shows that some dolphin families use tools to find food, and they pass these skills on to their young. The dolphins in Shark Bay, Western Australia hold sea sponges in their beaks to protect themselves while they forage the seafloor. Not all dolphins in this environment use these tools, and there is a measurable difference in the blubber of the ones that do versus the ones that don't because of differing food sources. This indicates a sustained cultural difference that reduces competition between dolphins of the same species, allowing for greater populations. It also helps further support the theory of evolution.



<http://swissinnovation.org/news/web/2014/03-140423-9c>

Ultrasound for Screening Breast Cancer

(swissinfo, April 24, 2014)

Doctors at Basel University Hospital have been carrying out screenings of more than 50 women's breasts for early signs of cancer using the one-of-a-kind prototype of a machine that is able to perform multimodal ultrasonic tomography (MUT). Only found in Basel, the apparatus requires the patient to position her breast over a small basin filled with water as she lies face-down so that ultrasonic sensors built into the water bath can transmit signals to a computer. Unlike obtaining regular mammograms which requires the patient's breast to be pressed tightly against panels, this painless method does not involve radiation either. This new technology is still in its testing phase but is nevertheless a timely development in light of the national strategy that was adopted in 2013 to encourage more widespread mammography screenings in women between 50 and 70.



<http://swissinnovation.org/news/web/2014/03-140424-93>

Discovery of Key Molecule Related to Diabetes

(ETH Zurich, May 02, 2014)

Researchers have discovered a key molecule that affects the onset of diabetes. In studies of various strains of mice, the scientists found micro-RNA-7 (miR-7) in lower concentrations among those insulin-resistant, yet well compensating strains than in the insulin-resistant strains exhibiting poor compensation. The researchers also identified differing levels of miR-7 in tissue samples taken from deceased body donors. In experiments on mice altered to produce either more or less miR-7, the researchers were ultimately able to show that this micro-RNA is a causal driver of decompensation and resulting defects in insulin secretion. This might help in the earlier detection of the disease and the development of new drugs.

<http://swissinnovation.org/news/web/2014/03-140502-37>



Liquid Droplet Model Explaining Cell Migration

(EPFL, May 06, 2014)

Living cells move; not just bacteria, but also cells in our own bodies. EPFL scientists have discovered a new relationship between the three-dimensional shape of the cell and its ability to migrate. The researchers at EPFL have determined the relationship between cell protrusion, shape and membrane tension. Using a model cell type taken from fish scales, the researchers developed a fast and simple way to evaluate the 3D shape of migrating cells by observing them in a chamber filled with a fluorescent solution. By applying various treatments to swell, shrink, or stretch the cells, they were able to observe their impact on membrane tension, shape, and protrusion velocity. The treatments only affected the cells' shape and migration speed, but not membrane tension. The overall conclusion was that the more spherical the cell, the faster it moves.

<http://swissinnovation.org/news/web/2014/03-140506-37>

Psilocybin Reduces Negative Processing of Emotions

(University of Zurich, May 08, 2014)

Depressed people react more strongly to negative environmental stimuli, and their thoughts are often turned to negative cognitions. Researchers have found that psilocybin, the active compound in Mexican hallucinogenic mushrooms, positively affects the mechanism for processing negative emotions. In even small amounts, the compound weakens negative emotions and improves mood. Currently available drugs for the treatment of depression and anxiety aren't effective on all patients and sometimes present strong undesirable side effects.

<http://swissinnovation.org/news/web/2014/03-140508-56>

Sport Strengthens Muscles and Nerves

(University of Basel, May 14, 2014)

Endurance sport not only changes the condition and fitness of muscles but also simultaneously improves the neuronal connections to the muscle fibers based on muscle-induced feedback. This link has been discovered by a research team at the bio center of the University of Basel. The team was also able to induce the same effect through raising the protein concentration of PGC1 α in the muscle. The findings have been published in Nature Communications. There may be a direct therapeutic application of the research findings in illnesses such as muscle wasting and amyotrophic lateral sclerosis (ALS). The team now aims to identify the exact signal that leads to the stabilization of synaptic connections, in order to apply this for treating muscle disorders.

<http://swissinnovation.org/news/web/2014/03-140514-4e>

Nasal Reconstruction with Grown Cartilage

(University of Basel, May 14, 2014)

Scientists at the University of Basel report first ever successful nose reconstruction surgery using cartilage grown in the laboratory. Cartilage cells were extracted from the patient's nasal septum, multiplied and expanded onto a collagen membrane. The so-called engineered cartilage was then shaped according to the defect and implanted. This new technique was applied on five patients, aged 76 to 88 years, with severe defects on their nose after skin cancer surgery. One year after the reconstruction, all five patients were satisfied with their ability to breathe as well as with the cosmetic appearance of their nose. None of them reported any side effects.



<http://swissinnovation.org/news/web/2014/03-140514-4c>

Smart Prosthetic Knees Enable In-Vivo Diagnoses

(EPFL, May 20, 2014)

EPFL researchers at five laboratories have developed intelligent prosthetic joints that integrate sensors to detect early failure, reducing patient suffering. Nearly 4 million people worldwide endure operations to replace defective joints. The number of procedures on knees is expected to increase sevenfold over the coming years, due to the development of recreational sports, obesity and lesions in cartilage. Once arthroplasty has been performed and the prosthesis set, doctors rely on patients' qualitative and subjective feedback. In about 20% of cases, the prosthesis is misaligned or unseals, causing significant, unquantifiable pain. The research team has developed sensors, integrated into the polyethylene part of the prosthesis, which can diagnose the interior, improving medical treatment and helping some patients avoid new operations. This project is funded by the Swiss National Science Foundation.



<http://swissinnovation.org/news/web/2014/03-140520-80>



PERL Prize Awarded for Cancer Detection System

(EPFL, May 20, 2014)

The start-up Lunaphore, which is developing a rapid and precise system for cancer detection, won the PERL Prize (Entrepreneurial Prize for the Lausanne region) worth CHF 50,000. Another campus start-up, G-Therapeutics, won the "coup de coeur du jury", receiving CHF 10,000. Lunaphore's new diagnostic tool, which is inexpensive and easy to use, enables doctors to perform an accurate assessment of cancer in a few minutes instead of the usual hours. This microfluidic system also improves accuracy. At clinical trials carried out in collaboration with the Institute of Pathology at the University Hospital of Lausanne (CHUV), analyses of breast tumors proved to be 100% correct. G-Therapeutics is developing a technology to reactivate the voluntarily controlled motor functions of the spinal cord of a paralyzed person after an accident.

<http://swissinnovation.org/news/web/2014/03-140520-6d>

The Gut's Role in Anxiety and Fear

(ETH Zurich, May 22, 2014)

Publishing in the Journal of Neuroscience, researchers at the ETH Zurich have discovered that signals which travel from the gut via the vagus nerve to the brain have an impact on modulating innate anxiety and learned fear. To investigate the role of these so called afferent signals, the scientists severed the afferent nerve fibers of a group of rats, thereby converting the two-way flow of nerve signals between the brain and gut to a one-way flow from brain to gut only. The researchers found that disconnecting the vagus nerve in this way significantly compromised the rats' ability to feel innate anxiety and respond to learned fear induced by an acoustic stimulus compared to a control group of rats whose vagus nerves were still intact. Besides contributing to the understanding of brain-body control processes, these results could have important implications for psychiatry such as in the treatment of post-traumatic stress disorder.

<http://swissinnovation.org/news/web/2014/03-140522-d6>

Additional Chromosome Introduces Chaos to the Whole Genotype

(NZZ, May 28, 2014)

Researchers from the University of Geneva found in a study of two twins, one of which afflicted by the Down syndrome, that the additional chromosome introduces changes to the complete genotype. The study led by Stylianos Antonarakis investigated two monozygotic twins of which only one had the additional chromosome. Therefore, all the differences in the genotype between these two twins are a consequence of trisomy 21. The scientists found that the complete genotype was affected by the presence of the chromosome, when the translation into proteins was either too strong, or too weak. In Switzerland, it will be possible to test if a baby is affected by the Down syndrome starting this August.

<http://swissinnovation.org/news/web/2014/03-140528-ed>



Data-Driven Psychiatry

(NZZ, May 28, 2014)

Currently, technical methods are rarely applied in the psychiatry. However, many still hold the belief that technology will soon bring a new era of data-driven insights into the human brain. One of the projects in the area, the Human Brain Project, will begin in October in Geneva and include more than 80 research teams from all around Europe. The goal is to create a complete virtual simulation of the human brain. The project costing 1.2 billion Euros will be funded by the European Union and partners from research institutions and the economy. On the other hand, the ETH Zurich and the University of Zurich founded the Centre for Neuroscience (ZNZ) already in 1998, where they have been using genetic tests and measurable biological markers to evaluate psychotropic medicaments. Currently, they are using cutting-edge functional magnetic resonance imaging (fMRI), amongst others, to drive neuroscience forward.

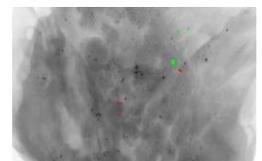
<http://swissinnovation.org/news/web/2014/03-140528-0c>



Improving Breast Cancer Diagnosis Through Mammography

(ETH Zurich, May 28, 2014)

Phase contrast X-ray imaging has enabled researchers at ETH Zurich, the Paul Scherrer Institute (PSI) and the Kantonsspital Baden to perform mammographic imaging that allows greater precision in the assessment of breast cancer and its precursors. The technique could improve biopsy diagnostics and follow-up. The new developments enable distinguishing between the different types of microcalcifications observed in breast tissue and help assigning them to malignant lesions. In the future, this technique can aid physicians to de-





termine in a non-invasive way where premalignant and malignant breast lesions are most likely located. One goal of breast cancer screening is to detect (groups of) microcalcifications in the breast, because these may be associated with early stages of breast cancer since they often occur in connection with cancer cell death.

<http://swissinnovation.org/news/web/2014/03-140528-2a>

Paediatric End-of-Life Care Needs in Switzerland – The PELICAN Study

(University of Basel, May 28, 2014)

End-of-life care in children is an integral part of paediatric palliative care and covers particular needs during a highly vulnerable phase of life, not only for the affected child or young person but the whole family. The overarching aim of this study is to provide comprehensive information and understanding about the current practices of end-of-life care (defined as the last 4 weeks of life prior to death in this study) in the paediatric setting in Switzerland (hospital and community health care), about parental perspectives and the perspectives of the health care professionals. Based on this data required steps to develop and implement needs-driven care can be formulated. The study is supported by several organizations such as the Federal Office of Public Health, the Swiss Academy of Medical Sciences and the Swiss Cancer League.



<http://swissinnovation.org/news/web/2014/03-140528-9d>

Blocking MERS and SARS Viruses

(University of Bern, May 30, 2014)

An international team of researchers have found a substance capable of blocking corona viruses - the family to which MERS and SARS viruses belong. This discovery is a major breakthrough as there is no medicine against such viruses yet. The group of researcher, which includes Swiss contribution, has shown that the substance K22 effectively obstructs the viral life cycle of the pathogens in human cells. Apparently, the Achilles heel of the viruses' life cycle is the transformation of cellular membranes for the virus replication - the step where K22 inhibits the pathogens.

<http://swissinnovation.org/news/web/2014/03-140530-20>

4. Nano / Micro Technology / Material Science

Self-Defending Surface

(ETH Zurich, May 14, 2014)

ETH researchers have developed a special film that triggers an intense reaction when destroyed. Inspired by the bombardier beetle, they developed a chemical defense mechanism designed to prevent vandalism. The researchers use plastic films with a honeycomb structure for their self-defending surface. The hollow spaces are filled with one of two chemicals: hydrogen peroxide or manganese dioxide. The two separate films are then stuck on top of each another. When subjected to an impact, the interlayer is destroyed, causing the hydrogen peroxide and manganese dioxide to mix. This triggers a violent reaction that produces water vapor, oxygen and heat. If the surface is damaged, hot foam is sprayed in the face of the attacker. This technology could be used to prevent vandalism or protect valuable goods.

<http://swissinnovation.org/news/web/2014/04-140514-2d>

Future of Swiss Watchmaking

(EPFL, May 29, 2014)

In recent years emerging technologies such as 3D printing, plasma etching and laser machining have opened new possibilities in the fabrication of many industrial products including complex components for watches. In order to prepare the Swiss watchmaking industry for a future where these technologies will be commonplace, the luxury good holding company Richemont together with the EPFL announced the creation of a new academic chair in „Multiscale Manufacturing Technologies“. The future professor, who will start working at the Institute of Microengineering in Neuchâtel in 2015, is among else expected to create and integrated platform of the very latest manufacturing technologies. The investment shows a clear commitment by both parties to support Switzerland's world leading high precision industry.



<http://swissinnovation.org/news/web/2014/04-140529-1a>



Improved Manufacturing of Transparent Conductive Oxides

(EMPA, May 28, 2014)

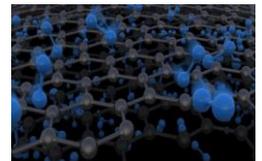
Transparent conductive oxides (TCOs) are thin films that are both transparent and conductive. They are used in electronics such as touch screens, and in solar cells. The current manufacturing technique is very expensive and ecologically suboptimal. The Federal Laboratories for Materials and Technology - Empa has developed a new manufacturing technique for TCOs that allow them to be made with a water-based technique instead of plasma and a vacuum. Also, post-processing requires temperatures of 90 Celsius instead of 400-600, thus requiring less energy and increasing compatibility with certain low-temperature substrates. Overall, the new process is more eco-friendly and cheaper than the old one. Further development will allow it to be used with flexible electronics too.

<http://swissinnovation.org/news/web/2014/04-140528-09>

Ultra-Thin Graphene Membrane

(ETH Zurich, April 17, 2014)

Researchers at ETH Zurich have created the thinnest membrane that is technologically feasible. They layered two sheets of graphene, each one atom thick, and then accurately drilled tiny holes using focused ion beam milling. The membrane allows small molecules to pass easily but filters out larger ones. Such a material, once commercialized, could be used to create better waterproof clothing (it is 1000 times more breathable than Goretex) or to precisely and very quickly filter fluids.



<http://swissinnovation.org/news/web/2014/04-140417-64>

5. Information & Communications Technology

Former CERN Students Develop NSA-Prove Email Service

(boston.com, May 22, 2014)

Five students from MIT and Harvard have developed a secure email service and create a truly private email provider that went live mid-May. The students, who met while working at the European Organization for Nuclear Research in Switzerland (CERN), were able to create a new email platform called ProntoMail, which includes a multitude of interesting features. One of the most prominent ones is the self-destruct feature, which allows users to send emails that delete themselves in the recipient's inbox after a specified amount of time. Furthermore, they use end-to-end encryption and have very strong user authentication measures. As encryption and decryption are completely invisible to the end-user, users do not notice any difference compared to other standard email services.



<http://swissinnovation.org/news/web/2014/05-140522-5a>

Swiss Game Developers Taking Off

(20min, May 22, 2014)

The Zurich-based studio Blindflug has developed one of the most successful Swiss gaming apps: First Strike. The game that has a nuclear war as theme is the first game to be released under the newly founded studio label. The game developed by the Blindflug co-founders Jeremy Spillmann and Moritz Zumbühl has been sold over 25'000 for a unit price of CHF 4. But not all the money is going back to the creators. Besides being politically and socially involved and including such themes in their games, the two co-founders have also committed to donate a part of the revenues to charitable organizations.

<http://swissinnovation.org/news/web/2014/05-140522-be>

Hidden Data in Cloud Storage

(University of Zurich, April 03, 2014)

A PhD student at the University of Zurich, Guilherme Machado, recently discovered that cloud storage websites like Google Picasa or SoundCloud don't carefully check the content of files being uploaded to their website. Thus, data formats other than those intended can be uploaded, if done carefully. To do this, he created a software to hide data within picture or audio files and upload those files to cloud storage. The hidden data can be reassembled with the proper information. Such a system could be used to increase privacy or for subversive purposes. It also demonstrates a security concern for cloud data storage providers.

<http://swissinnovation.org/news/web/2014/05-140403-d4>



Ultra-compact Projector Entering New Markets

(EPFL, May 22, 2014)

The EPFL spin-off Lemoptix has developed an ultra-compact projector enabling them to enter new emerging market, which include the automotive market, 3D scanners for laptops and finally, augmented reality glasses. The technology, which is based on micro-electro-mechanical systems, as well as their efforts for constant innovation has gained Lemoptix a significant advantage within a highly competitive market. With only CHF 5.5 million, this young startup has achieved to grow rapidly, while continuously improving their concepts and strengthening their patent portfolio. With only 22 employees from a vast range of fields, the companies ensure fast execution, high performance and rapid adaption to customers' requirements.



<http://swissinnovation.org/news/web/2014/11-140522-97>

Whitepaper on IT Infrastructure for Data Heavy Research

(CERN, May 22, 2014)

The LHC detectors at CERN produce a staggering one petabyte of data per second, a figure that will increase during the next LHC run starting in 2015. New international research infrastructures are being deployed and are expected to produce comparable—or even greater—amounts of data in various scientific domains, such as neurology, radio astronomy or genetics, and with instruments as diverse as Earth observation satellites, high-performance genomic sequencers, neutron diffractometers or X-ray antennas. CERN openlab together with a number of European laboratories, such as EMBL-EBI, ESA, ESRF, ILL, and researchers from the Human Brain Project, as well as input from leading IT companies, have published a whitepaper defining the ambitious challenges covering the most crucial needs of IT infrastructures in domains such as data acquisition, computing platforms, data storage architectures, compute provisioning and management, networks and communication, and data analytics.

<http://swissinnovation.org/news/web/2014/05-140522-05>

High-Performance Computer "Euler" Inaugurated

(ETH Zurich, May 28, 2014)

The ETH Zurich has inaugurated the new Euler high-performance computer at the CSCS data center in Lugano, offering researchers extra processing power and flexibility to evaluate data and run complex simulations. "Euler" is not a supercomputer only made available to research teams on an exclusive, short-term basis, but rather a "general purpose" computer intended for use by all ETH Zurich researchers and hundreds of staff can work on it at any one time. Its computing capacity is therefore allocated to users according to a "shareholder" system, whereby individual research teams or departments purchase "shares" – a specific amount of processing power – from IT Services. This system – along with ETH Zurich's existing high-performance computer called "Brutus" – will provide the university with 440 teraflops of processing power. Unlike Brutus, however, Euler is based in Lugano rather than Zurich.



<http://swissinnovation.org/news/web/2014/05-140528-60>

ETH Zurich Educating Hackers

(Tages Anzeiger, May 28, 2014)

Because penetration testers are widely sought in the Swiss industry, the ETH Zurich offers specialized Network Security courses for Master Students. The skills these hackers possess are indispensable to protect corporate and government networks from cybercriminals. For that reason, companies are paying between CHF 90,000 and 135,000 annually for such security experts after graduation, according to SwissICT.

<http://swissinnovation.org/news/web/2014/05-140528-b8>



Encryption Algorithm Easily Cracked

(EPFL, May 28, 2014)

Scientists at EPFL have shown that a family of encryption algorithms thought to be secure could easily be cracked in two hours. The research focuses on algorithms based on discrete logarithm problems with keys based on supersingular curves. Although these problems were thought to be difficult to solve, thus making them secure, they are based on mathematical principles that are not completely understood. These new findings eliminate one possible choice for future encryption algorithms.

<http://swissinnovation.org/news/web/2014/05-140528-c6>



6. Energy / Environment

Switzerland Achieved 2008-2012 Kyoto Targets

(swissinfo, April 10, 2014)

In 2008-2012, Switzerland surpassed the 8% targeted decrease in greenhouse gas emissions despite population growth of 18%, an increase in the number of cars on the road by 34%, and a 36% increase in Gross National Product according to the Federal Environment Office. Achieving an impressive 9% decrease in emissions was no mean feat and was the result of compensatory decreases in sectors other than the motor industry, a carbon dioxide levy on combustible fuels, promotion of public transport, improvements in energy efficiency, the purchase of pollution rights, and other measures. Environmental organization WWF however claims that emissions have basically remained constant over the four-year period, and that the target would not have been met if Switzerland had not purchased these rights. Still, Switzerland remains ambitious and is looking to decrease its emissions by 20% from 2013 to 2020, thereby setting an example on the international level.

<http://swissinnovation.org/news/web/2014/06-140410-db>

Homemade Solar Lamp for Developing Countries

(EPFL, April 14, 2014)

Kerosene lamps, which are widely used in developing countries, are bad for lung health, bad for the environment, and expensive. A small startup, LEDsafari, founded by an EPFL PhD candidate, has created a solar-powered LED lamp that can be assembled mostly from scrap parts; only a solar cell is imported. 5-6 hours of solar charging provides 4-5 hours of light. The startup relies on a small group of travelers who are trained in Switzerland and then go train villages in developing countries on the negative effects of kerosene lamps and the manufacturing technique for the solar LED lamp. The villagers learn in three days and then disseminate their knowledge amongst themselves.



<http://swissinnovation.org/news/web/2014/06-140414-66>

Effect of Energy Savings on CO2 Emissions

(University of Bern, April 04, 2014)

One might think that increased energy savings leads to lower carbon dioxide emissions, but this is not necessarily the case. Researchers at the University of Bern have been investigating the rebound effect of reduced heating requirements due to global warming. As the climate warms, buildings need to be heated less, but the saved money is instead spent on maintaining a higher building temperature, or in other ways that cause CO2 emissions, such as travel. From data and simulations, the researchers showed that until 2050 heating requirements will drop by 14.5 percent, but overall energy consumption will only drop 0.8 percent and CO2 emissions 1.1 percent. This should inform future energy efficiency policies and laws.

<http://swissinnovation.org/news/web/2014/06-140404-d1>

Low Tech Wooden Wind Turbine for Developing Countries

(ETH Zurich, May 26, 2014)

More than 85% of the sub-Saharan population has no access to electricity. Students from ETH Zurich have designed a wind turbine out of readily accessible materials. Mast, housing and rotor blades are made of bamboo and wood, and connected to each other by simple metal parts. Using templates, the parts can be manufactured to the required precision. The blades are adjusted mechanically rather than electrically, and in case of high wind fold back like palm fronds. In collaboration with local engineers, the low tech turbine was dimensioned in such a way that it can produce enough power for a household for several years.



<http://swissinnovation.org/news/web/2014/07-140526-2c>

Making Use of Carbon Dioxide

(swissinfo, April 11, 2014)

While carbon dioxide is often viewed negatively for its effect on global warming, two Swiss organizations are working on making use of it as an ingredient for synthetic fuels. Climeworks is developing a direct air capture (DAC) system that filters the atmosphere and stores the CO2. Their demonstration system can capture one ton of CO2 per year. The Swiss Federal Laboratories for Materials Science and Technology - Empa is working with zeolites, which act as efficient, low-temperature catalysts to convert CO2 and hydrogen into methane, which can be used as a fuel source. Further work to industrialize this process is needed, but both projects are attracting commercial attention.

<http://swissinnovation.org/news/web/2014/06-140411-ea>



Green University Guide for Sustainable Universities

(ETH Zurich, April 28, 2014)

Presidents of ten of the world's leading research universities, members of the International Alliance of Research Universities (IARU), talked about how research institutions both influence and bring value to society. One way that the IARU member universities have contributed value in their regions is through the IARU Sustainable Campus Initiative and the publication called The Green Universities Guide, which represents the collective contribution and achievements of IARU member universities. The guide will include an IARU CO2 benchmarking study; recommendations for making campuses more sustainable environments; and best practices case studies that illustrate the leadership role that IARU member institutions have demonstrated in their regions. The guide will be launched at the IARU "Making Universities Sustainable" conference, open to leading decision makers, university facility managers, and members of industry in October 2014.

<http://swissinnovation.org/news/web/2014/06-140428-d8>

Efficient Agriculture Produces Less Greenhouse Gases

(Federal Administration, April 29, 2014)

Agriculture is an important producer of greenhouse gases in Switzerland, especially through methane emissions from livestock and the storage of dung for fertilizer, and nitrous oxide emissions from chemical fertilizers. Between 1990 and 2012 the greenhouse gas emissions from agriculture diminished by 9%, and food production was slightly increased. This development is mainly due to the decreased number of livestock in Switzerland: although cows produce more methane per individual because of increased milk production, overall more milk is produced with fewer cows, slightly decreasing the amount of methane produced per liter of milk. Due to more efficient crop production, the amount of chemical fertilizer has strongly decreased since 1990.

<http://swissinnovation.org/news/web/2014/06-140429-ba>

Pioneering Work in Wastewater Treatment

(EAWAG, May 06, 2014)

Following an amendment to the Swiss Water Protection Law the aquatic research institute Eawag is working on upgrades to 100 wastewater treatment plants in Switzerland. The work underway will enable the treatment plants to better eliminate micropollutants. Micropollutants are organic trace substances such as pharmaceutically active compounds or industrial chemicals introduced into surface waters via wastewater. The upgrades follow investigations showing that treatment of cleaned wastewater with ozone or powdered active charcoal reduces the micropollutants present by at least 80%. On September 6 2014 the ARA wastewater plant Dübendorf is expected to be the first plant to introduce fully technical ozonation. The Swiss Water Association will support the process with a newly formed micropollutants process engineering working group in charge of information exchange.

<http://swissinnovation.org/news/web/2014/06-140506-d5>

Evaluating the Benefits and Drawbacks of Biochar

(ETH Zurich, May 06, 2014)

Biochar, a range of charcoal-like products obtained from the carbonization of biomass has been hailed as a "silver bullet" to solve major problems in agricultural production. Presumed to be a way to recreate highly fertile Black Earth soils as cultivated by indigenous people in Amazonia 500-2500 years ago the interest in the use of biochar has been immense. While the addition of biochar to soils is believed to be correlated with a wide range of benefits, drawbacks often connected to the very drivers of said benefits are reason for caution. It is suggested to rigorously define what the term biochar should entail and introduce standards for biochar products followed by meticulous studies on the benefits and drawbacks of their use in agriculture.



<http://swissinnovation.org/news/web/2014/06-140506-31>

Different Toxic Effects of Pesticides on Different Aquatic Invertebrates

(EAWAG, May 08, 2014)

Toxicokinetics is the study of the distribution and transformation of toxicants within a body. Using toxicokinetics, one can potentially explain why the chemical concentrations of a certain substance vary across different tissues within a species, and hence understand why a certain pesticide could be more toxic to a shrimp than a snail. In a groundbreaking study published in Environmental Science & Technology, an international team of scientists including those from the Swiss Federal Institute of Aquatic Science (EAWAG) emphasizes this toxicokinetic approach to understanding varying species sensitivities to a given chemical and to different chemicals respectively. With roughly 7,000 species vulnerable to pesticide exposure in European waters, the researchers' measurement and modeling methods could prove to be integral in further toxicity studies.

<http://swissinnovation.org/news/web/2014/06-140508-c8>



From Algae to Biogas

(20min, May 09, 2014)

An alternative energy source to fossil fuels is biogas that can be obtained from animal and plant waste. This raw material however is scarce in Switzerland, therefore researchers looked for possible replacements. Resulting from the collaboration of several Swiss universities, a production method is now under development at the Paul Scherrer Institut (PSI), transforming algae into biogas. Applying high pressure and high temperature, this promising new process is far more efficient than conventional techniques. At present, the process is unprofitable but costs could be lowered by moving production abroad. At a further stage, biogas could be produced along the natural gas pipeline and injected into the stream at different locations.



<http://swissinnovation.org/news/web/2014/06-140509-56>

Compressed Air Energy Storage

(EPFL, May 13, 2014)

What began as Sylvain Lemofouet's doctoral thesis to develop a turnkey electrical energy storage system at EPFL's Industrial Energy Systems Laboratory (LEI) has now become HyPES, a leading product of EPFL spin-off Enairys. Hydro-Pneumatic Energy Storage (HyPES) consists of a system that is able to store energy in the form of compressed air; a necessary component of electricity generation using solar and wind energy sources. The Canton of Vaud has granted CHF 1.66 million towards the further development of the HyPES system and construction of pilot plants in Lausanne, as it is in line with the canton's energy policy and long-term vision of future electricity networks according to a state councilor of the canton. It is hoped that HyPES devices will enter the market soon.

<http://swissinnovation.org/news/web/2014/06-140513-19>

Innovation Needed for Climate Adaptation

(ETH Zurich, May 14, 2014)

The Intergovernmental Panel on Climate Change (IPCC) has issued the Fifth Assessment Report of Working Group II, covering climate impacts and adaptation. Whereas the impacts have received broad press coverage, less attention has been paid to adaptation strategies. The impacts of climate change – e.g. melting glaciers, reduced snow cover, an increasing frequency of extreme events, coastal flooding, and ecosystem changes – are already being felt, and will likely grow stronger. To adapt to future climate change and improve human welfare, a first step is reducing vulnerability and exposure to present climate variability. Innovations include improved medium-term weather prediction and early warning systems; new models for insurance contracts and finance; higher yield, drought-resistant seed cultivars; better pro-active land-use management practices in hazard-prone areas.



<http://swissinnovation.org/news/web/2014/06-140514-15>

Fuel Cell Expertise in New Swiss Railway Minibars

(PSI, May 14, 2014)

The Swiss Federal Railways (SBB) has launched a new mini-bar in its intercity trains. It features a novel fuel cell system co-developed by the Paul Scherrer Institute (PSI) that ensures sufficient capacity in a limited space. Building on preliminary work by the PSI and ETH Zurich, the Bern University of Applied Sciences set out to make a compact, simple and cost-effective fuel cell system for portable applications. To simplify and reduce the voluminous and complex control engineering subsystems for humidifying the fuel cell membrane, the researchers developed a sophisticated internal humidification concept. To ensure efficient heat transfer, they decided to cool the cell stack with air instead of water. This is an example of successful technology transfer from basic research to commercial products.

<http://swissinnovation.org/news/web/2014/06-140514-bb>

Producing High-quality Fuel from Biomass

(PSI, May 20, 2014)

PSI researchers have investigated how lignin can be directly produced in a targeted manner from plants, with the help of various catalysts. A kind of bio-oil can be extracted from lignin, e.g. by thermal decomposition. This pyrolysis oil could be a useful fuel, but it is corrosive, making it difficult to store and transport. Energy-rich lignin is therefore considered troublesome waste. However, if the acrid oxygen is removed from the oil, valuable aromatics remain. The PSI scientists have investigated ways of making high-quality energy sources and





basic chemicals from lignin. They have extracted pure products from lignin in just one step using zeolites (minerals mainly composed of aluminum, silica and oxygen). They believe the selectivity of catalytic conversion could be enhanced through changes to synthetically manufactured zeolites.

<http://swissinnovation.org/news/web/2014/06-140520-e9>

Advantages of Small Hydroelectric Power Stations

(ADEV, May 22, 2014)

The latest discussion in the energy strategy for 2050 has focused on small hydroelectric power stations with up to 300 kW power. The main advantages reported by the Swiss Small Power Station Owners (ISKB) comprise the grid stability, ecologic harmlessness, maximal rest water, no flood and downsurge, untouched streaming water remains intact, low costs owing to longevity and the creation of new local jobs. These measures will increase the share of provided green energy, enhance the riverbeds and create new valuable jobs throughout the entire country.

<http://swissinnovation.org/news/web/2014/06-140522-d9>

A New Approach to Modeling Sediment Flow

(EPFL, May 23, 2014)

Transported by water or wind, sediments have a significant impact on the environment, especially on bridges. Each year in Switzerland, water carries millions of tons of rock from mountains to valleys, and filtering dams have been constructed to prevent mudflows from reaching people's homes. Some local gravel dumps, previously emptied once every 10 years, now need emptying three times a year at great expense. Predicting the quantity and behavior of such random phenomena is very difficult. Researchers at EPFL's Laboratory of Environmental Hydraulics (LHE) have investigated the role of sediment flow fluctuations, integrating extreme fluctuations (not just averages) into numerical modeling of sediment transport. The stochastic equations developed by the LHE can be applied to additional environments beyond mountain rivers, e.g. wind transport.

<http://swissinnovation.org/news/web/2014/06-140523-02>



New Insights into Photosynthesis

(PSI, May 26, 2014)

New real time observations of structural changes in green algae have led to a complete revision of how algae and plants react to light. The study conducted by researchers from Paul Scherrer Institut (PSI) and colleagues in Japan, France and Hungary found that under specific light conditions the properly aligned, light-sensitive membranes are being disturbed and a large part of the light-harvesting proteins are deactivated. Instead of moving inside the membrane, the light-harvesting proteins barely move and thereby contribute to the inactivity.

<http://swissinnovation.org/news/web/2014/06-140526-63>



Assessing Drug Usage by Means of Wastewater

(EAWAG, May 27, 2014)

Analyzing waste water of cities is a unique tool to draw conclusions on drug use of entire cities. Between 2012 and 2013 such a one-week monitoring was carried out in 42 European cities, showing that Swiss cities have an above-average consumption of cocaine. Whether it is that the cocaine being used in Switzerland has a comparatively high level of purity, or there is a higher use per head or more users than was previously estimated from other studies is yet unknown. The waste water was monitored for an entire week and tested for cocaine, amphetamine, crystal meth and ecstasy.

<http://swissinnovation.org/news/web/2014/06-140527-3c>

Improved Durability for Solar Thermal Panels

(EPFL, May 28, 2014)

Solar thermal panels developed at EPFL are dressed up in unique and patented new materials. Researchers created a stronger black coating that retains its original color and thereby its absorption properties much longer than traditional panels. Like most elements of a building, the lifespan of a solar thermal panel is between 25 and 30 years. To slow the ageing process and maintain their performance, a team of researchers from EPFL have, improved the black coating used for thermal sensors and developed an original and patented method for depositing the coating.

<http://swissinnovation.org/news/web/2014/06-140528-4a>





Two-Wheeled Polluters Running Rampant

(PSI, May 28, 2014)

Not cars or trucks, but mopeds with their two-stroke engines are the main source of fine particles and other air contaminants in many towns in Asia, Africa and southern Europe. This is revealed by the study of an international research team headed up by researchers at the Paul Scherrer Institute PSI. The reasons for the high emissions are the combustion properties in two-stroke engines and the overly lenient emission requirements for small two-wheelers. The scientists proved this by using a smog chamber developed at PSI to measure the emission of organic aerosols and aromatic hydrocarbons from mopeds in the laboratory and in standard driving cycles. The researchers have calculated that in the Thai capital Bangkok two-stroke mopeds generate as much as 60 percent of emissions of primary organic aerosols. However, these two-wheelers only account for 10 percent of fuel consumption by traffic in the city.

<http://swissinnovation.org/news/web/2014/06-140528-2d>

7. Engineering / Robotics / Space

Novel Approaches to Driverless Technology

(ETH Zurich, May 06, 2014)

A team of researchers at the ETH Zurich and the universities of Braunschweig, Oxford and Parma in collaboration with Bosch and Volkswagen are developing novel technologies for electric vehicles. The research project called V-Charge centers on two main areas, namely valet parking and charging. Focusing on smartphone app triggered driverless parking in parking garages where no GPS signal can be received, the team successfully engineered a driverless system based on computer vision. Using only already available sensor systems and cameras, both suited for series production, the team ensures its solutions will be particularly cost effective. For the remainder of the project set to conclude in 2015, the team will continue to work on reliable navigation and refine the systems to allow high accuracy maneuvers for precise parking required to allow driverless charging.



<http://swissinnovation.org/news/web/2014/07-140506-6a>

Public Transport Development and Urban Sprawl

(EPFL, April 11, 2014)

Scientists investigated whether development of public transport in Zurich Area would encourage suburban sprawl. Scientists conducted simulations on two concentric zones in 2030. The six models studied all gave similar results: the population of the canton of Zurich (not including the city) increased about 1%, a very modest consequence for the canton. The change will be more in the way growth is distributed, rather than a structural change in the landscape, because zoning is strongly constrained in the canton of Zurich by a cantonal development plan that controls where and when growth can occur in building zones and although public transport encourages suburbanization, it also tends to lead to denser development in the vicinity of train stations. Finally, it's most likely that the surrounding cantons, which have a larger supply of more extensive and less expensive building zones, will end up absorbing the urban sprawl.

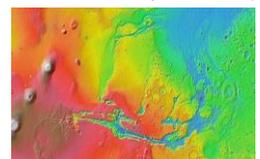


<http://swissinnovation.org/news/web/2014/07-140411-4f>

New Theory on Martian Canals

(ETH Zurich, May 12, 2014)

A scientist at ETH has proposed a new theory for Martian geology. Primeval lava flows formed the massive canyons and gorge systems on Mars. Water, by contrast, was far too scarce on the red planet to have cut these gigantic valleys into the landscape. The gigantic gorge system Noctis Labyrinthus and Valles Marineris were created exclusively through the erosive force of immense lava flows. With this study, the scientist is swimming against the current and perhaps dismantling a dogma in the process. Most studies of the past 20 years have been concerned with the question of water on Mars and how it could have formed the canyons. Back in 1977, a researcher first posited the idea that the Valles Marineris may have been formed by lava, but the idea failed to gain traction.



<http://swissinnovation.org/news/web/2014/07-140512-92>



Robots Transform into Furniture

(EPFL, May 21, 2014)

Scientists have developed small robotic modules that can change their shape to create reconfigurable furniture. Like Lego bricks, "Roombots" can be stacked upon each other to create various structures. Each 22 cm-long piece, which looks like two large dice joined together, has a wireless connection. Inside are a battery and three motors that allow the module to pivot with three degrees of freedom. The modules have retractable "claws" that they use to attach to other pieces and form larger structures. With a series of rotations and connections, the modules can change shape and become any of a variety of objects and pieces of furniture. The Roombots project is a true technological challenge, and for the moment it includes four functional modules with an autonomy of one-hour - still not enough to create complete pieces of furniture, but enough to build simple structures and hybrid combinations.

<http://swissinnovation.org/news/web/2014/07-140521-01>

ETH Zurich Robots Playing in the Premier Football League

(ETH Zurich, May 28, 2014)

Students from ETH Zurich made their debut at the Standard Platform League's Robocup, a football championship for robots, this year. Their "dwarves" put in a solid performance. The robots took up their positions on the field by themselves and fought bravely for the ball. Unfortunately, they failed to win any of their four group games. However, the silver lining was the fact that the Z-Knipsers – the name of the robot team – improved with every game. The Z-Knipsers also received encouraging feedback from the Robocup community. For a debut tournament appearance, their performance was remarkable, especially given the fact that the ETH-Zurich team has only been working with these standard platform robots for just under three years – not very long compared to other teams, who have been contesting the Robocup for a decade.

<http://swissinnovation.org/news/web/2014/07-140528-4a>

Fast, Reactive Robotic Arm Controller

(EPFL, May 28, 2014)

Scientists at EPFL have developed a control system for a robotic arm that quickly and reactively can catch objects of different shapes and with complex dynamics, such as bottles and tennis rackets. The controller is first trained manually using a method called 'programming by demonstration' by being shown sample trajectories and corresponding arm motions to catch the object. It then builds a model of the system that it uses to control the arm and that it refines through trial and error. A reactive approach, such as this one, can be used to help robots safely interact with humans.

<http://swissinnovation.org/news/web/2014/07-140528-b9>

Intelligent and Ultra-High-Speed Optical Sensor

(CSEM, May 28, 2014)

CSEM and Lausanne-based company BOBST, the world's leading supplier of machinery to the packaging industry, have developed a unique ultra-high-speed vision sensor that meets the needs for the inspection and alignment of packages traveling at very rapid speeds. Since accuracy and reliability are indispensable to the achievement of perfect guiding and positioning when printing and shaping packaging, BOBST called on CSEM's expertise to develop a CMOS vision system able to capture and simultaneously respond to movements at ultra-high speeds. This joint development was supported by the Commission for Technology and Innovation (CTI).



<http://swissinnovation.org/news/web/2014/07-140528-10>

8. Physics / Chemistry / Math

Combined Diesel Exhaust Filtering and Catalysis

(PSI, April 15, 2014)

In today's diesel-powered cars and trucks, carbon particulates are filtered from the exhaust separately from carbon monoxide catalysis, both important steps in treating diesel exhaust. It was thought that carbon particulates halted the catalysis reaction. New research shows that under the right conditions, particulates actually help the reaction. The requirement is that carbon dioxide is present as well, which is often not the case in today's systems. This is good news for vehicle manufacturers, who can now develop a combined system that is more space efficient, given this new knowledge.

<http://swissinnovation.org/news/web/2014/08-140415-d1>



Producing Biofuel from Wood

(ETH Zurich, May 22, 2014)

Breaking up the wood structure of plant parts with a suitable pretreatment has been one of the most vexing issues when trying to produce biofuels from wood. Researchers at ETH Zurich have developed a new treatment involving steaming the woody biomass, subsequently blasting the wood structure and using scavengers to prevent reactive lignin fragments from undergoing unwanted lignin crossing reactions. This procedure has shown an increase in efficiency of the enzymes, as well as doubled the sugar yield compared to steam pretreatment with no scavenger admixture. The researchers had the method patented.

<http://swissinnovation.org/news/web/2014/08-140522-9f>



Converting Methane Into Hydrogen

(EPFL, May 22, 2014)

Clean energy, synthetic fertilizers, and many other chemicals rely on hydrogen, a molecule that can be obtained from methane by using water and a nickel catalyst. The dissociation of the two reactants on the catalyst is a crucial step for the overall efficiency of the process, and while the splitting of methane has been well characterized, the dissociation of water was hindered by experimental constraint. Lately EPFL researchers have succeeded in controlling specific vibrations of a water molecule with a novel laser approach and thereby affecting the efficiency of the reaction. By using the experimental results scientists were able to optimize theoretical models for water dissociation, which might enable designing improved catalysts and increase the overall efficiency of the reaction.

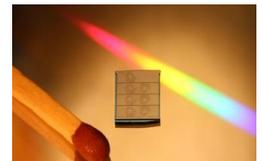
<http://swissinnovation.org/news/web/2014/08-140522-1f>

Terabit Data Transmission Using Optical Frequency Combs

(EPFL, April 20, 2014)

Scientists have achieved data transmissions on a terabit scale with a single laser light frequency using miniaturized optical frequency combs. The findings open the way for using this system in future high-speed communication systems. A continuous laser light is made of a single frequency, i.e. a single color. But that single frequency can be divided into separate lines of equal distance, which is referred to as an "optical frequency comb". Practically speaking, that could allow the simultaneous flow of data in optical cables, which could dramatically increase today's speed of data transmission. Optical frequency combs can transmit data on hundreds of separate wavelength channels, meaning that they can overcome transmission bottlenecks in data centers and communication networks.

<http://swissinnovation.org/news/web/2014/08-140420-25>

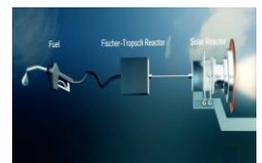


Turning Sunlight into Jet Fuel

(ETH Zurich, April 28, 2014)

The EU funded project Solarjet whose participants include researchers from the ETH Zurich, experimentally demonstrated a new process by which jet fuel can be synthesized using sunlight. Starting out with water, CO₂ and solar energy a high temperature solar reactor developed at the ETH Zurich was used to produce synthesis gas, a precursor for the synthesis of liquid hydrocarbon fuels such as kerosene. The solar reactor uses concentrated solar radiation as an energy source for a two-step redox process, which results in the production of the synthesis gas. After having achieved their first experimental success with the technology, optimization of the process will now come into focus. Furthermore the researchers are exploring possibilities for industrial applications of the potentially CO₂-neutral process.

<http://swissinnovation.org/news/web/2014/08-140428-82>

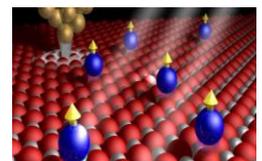


Strongest Single Atom Magnets

(ETH Zurich, May 09, 2014)

The smallest possible magnets are the size of a single atom. Now scientists have reached the limits of optimization of the tiny particles: they have created single atom magnets that are as strong and stable as is physically possible for the class of atoms used. The magnets comprise a single cobalt atom located on an ultra-thin magnesium oxide surface. Measurements revealed that the system with the individual cobalt atoms on magnesium oxide is magnetically three times stronger, atom for atom, than one made of pure cobalt. The single-atom magnets are very stable against external perturbations, which are a prerequisite for technological applications: reversing the polarity requires a thousand times more energy per atom – called magnetic anisotropy energy – than with pure cobalt.

<http://swissinnovation.org/news/web/2014/08-140509-ff>



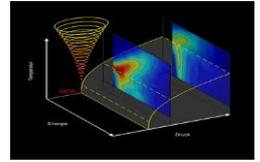


Quantum Phase Change

Phase change is commonly observed when ice melts. However, quantum physics has an analogous phase change behavior that an international team, including the Paul Scherrer Institute and the University of Bern, were able to demonstrate on the material TiCuCl_3 . Under different pressures, the material shows different types of excitations and organization in its spin magnetic moment. The external pressure changes the distance between atoms and thus changes their interactions. Measurements were performed using neutron imaging at the Paul Scherrer Institute. Quantum phase change plays an important role in some macroscopic phenomena, such as high-temperature superconductivity.

<http://swissinnovation.org/news/web/2014/08-140406-23>

(PSI, April 06, 2014)

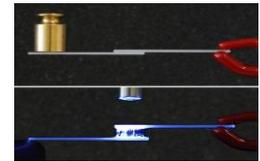


Supramolecular Glue Uses Light to Dissolve Adhesive

Researchers at the University of Fribourg's Adolphe Merkle Institute (AMI) have developed a polymeric structure whose connections dissolve under light exposure and which can be used to assemble and re-assemble materials. The results of the research have been published in *ACS Applied Materials & Interfaces*. The secret behind this new material lies in the components of the supramolecular bond. Unlike conventional polymers, formed of long chains of similar molecules, these special polymers comprise smaller molecules linked into longer polymer chains with "sticky ends". Under ultraviolet light, the sticky ends become liquid, enabling the material to be separated. When removed from light, the polymers harden again. The process also works with heat. Discussions are underway with industry partners to develop practical applications.

<http://swissinnovation.org/news/web/2014/08-140516-41>

(University of Fribourg, May 16, 2014)



9. Architecture / Design

Building the Sustainable Cities of the Future with Soil

According to the UNESCO, approximately 40% of humankind lives in buildings constructed with clayey earth or other earthbound materials. Therefore, it is surprising that this building material has a bad reputation, especially in developing nations, in spite of age-old usage traditions and low prices. In a lab on the Ethiopian Institute of Architecture, Building Construction and City Development in Addis Ababa, the ETH Zurich collaborated with local partners to develop a two-storied building unit consisting solely of locally sourced materials, i.e. without using steel or concrete. Their construction was aptly named "SUDU" Sustainable Urban Dwelling Unit.

<http://swissinnovation.org/news/web/2014/09-140528-ff>

(ETH Zurich, May 28, 2014)



Dynamic Animation - A Child's Play

Walt Disney along with ETH Zurich is working on dynamic animations, a new art at the intersection of graphics and robotics. Every picture is composed of tiny disc shaped robots, each corresponding to a pixel. The trajectory and color changes of the pixels are programmed so that they form moving images. "Pixels with personality" function in a way that if a pixel is removed from its place, the rest will respond by recreating the shape. If the captured pixel is released, it will hurry back to find an open spot and change its color to fit its surroundings. If scaling up of experiments was successful, it would allow children to control a fleet of robots the way Mickey Mouse controlled a bevy of brooms.

<http://swissinnovation.org/news/web/2014/09-140509-d0>

(wired.com, May 09, 2014)



World's Most Modern Convention Center

EPFL's newly opened SwissTech Convention Center is one of the most modern and best equipped conference centers in the world, designed to meet demand from scientists, businesses, and local and international institutions. As one of the few convention centers in Europe located on a university campus, it will also serve as smart conferencing lab – a place to experiment with the most innovative technologies for improving the flow of ideas in scientific

(EPFL, May 14, 2014)





conferences and making these exchanges more fruitful. Its large auditorium can be automatically transformed in about 15 minutes from a 3,000-seat amphitheater to a banquet hall of more than 1800 square meters, thanks to Canadian “Gala Systems” technology. Countless workroom configurations are also possible. The STCC was financed through a pioneering public-private partnership.

<http://swissinnovation.org/news/web/2014/09-140514-4b>

New Center for the Arts and Cultural Theory

(University of Zurich, May 28, 2014)

A new center for the arts and cultural theory (ZKK) has been established at the University of Zurich. The center acts as an interdisciplinary focal point for researchers from the disciplines of literary, fine arts and movie sciences with the goal of understanding the potential for cultural theory found in aesthetic processes. The institute will analyze the critical reflexive and stimulating dimensions in the fine arts in the modern era and the present as well as an analysis of the subject from a global historical perspective.

<http://swissinnovation.org/news/web/2014/09-140528-f6>

Support for Design Startups

(startupticker, May 28, 2014)

Creative Hub, together with the Albert Koechlin Foundation, has put together a program to improve support of design startups. The two organizations have teamed together to help designers create a business plan and then implement it with low interest rate financing from the foundation. Creative Hub is also sponsoring design hackathons to help designers bring their ideas to life in an intense 48 hour session.

<http://swissinnovation.org/news/web/2014/09-140528-0a>

Joint Urban Development Roundtable at ETH Zurich

(ETH Zurich, May 28, 2014)

The ETH Zurich jointly organized an urban development roundtable with the State Secretariat for Economic Affairs. The next decade will be decisive for cities in the global South. We are fast approaching our last chance to define a sustainable urban model for the future. While most international development agencies have already initiated urban programs the key challenge today is achieving a more integrated approach. The urban development roundtable represented another step in this direction. In collaboration with SECO, we brought together some of the world’s major players and funders of urban development, including the World Bank, the Cities Alliance, the Cities Development Initiative for Asia, and IDB. By placing everyone in one room, and connecting them with exciting urban research happening at ETH such as the Future Cities Lab, the ETH successfully identified synergies and demonstrated how universities can contribute not only through cutting edge design and technology, but also by educating the next generation of city-shapers.

<http://swissinnovation.org/news/web/2014/09-140528-18>

10. Economy, Social Sciences & Humanities

MIT and UZH Collaborate on Poverty Study

(20min, May 29, 2014)

Scientists from University of Zurich and MIT have conducted a study concerning the psychology of poverty. They have revealed that people without means have little to no chance to break through poverty. The beginning of the line of argument is characterized by the assumption that poverty causes stress, fear and negative emotions. The scientists were able to show in a further step that these feelings have a direct impact on economic actions of people. People at the verge of poverty are in daily existential fear which makes them increasingly risk-averse. Therefore, they tend to focus on short term projects and considering the present income, which leads to the lack of long-term planning as investing in drawn-out education.



<http://swissinnovation.org/news/web/2014/00-140529-4f>

Strong Swiss Industry

(Federal Administration, May 28, 2014)

The Swiss Federal Council has approved of a strategical paper on the industrial policy in Switzerland. The report shows that the Swiss industry has a strong position in the international comparison in spite of the global economic challenges today. Measured by the export and the added value per person, Switzerland has one of the most com-



petitive of the world. In the coming years, the Swiss economic strategy will focus on three key factors: Firstly, the Federal Council plans to increase the competition in the internal market and pursue an economic liberalization in foreign markets. Secondly, the Swiss productivity shall be bolstered by a strong human capital through education, research, and innovation. And thirdly, the entrepreneurial conditions will be improved through a strong infrastructure and a healthy state budget and a protection of intellectual property on an international level.

<http://swissinnovation.org/news/web/2014/10-140528-48>

Human Simulation App: 'Experimental Literature' at your Fingertips

(EPFL, April 17, 2014)

Now available for free for smartphones, computers, and tablets, 'Human Simulation' promises to revolutionize the way its users view and approach literature. Developed by Cyril Bornet at EPFL's Laboratory of Digital Humanities, the application consists of an eponymous series of ten books written by Swiss novelist Daniel de Roulet. The series' 297 chapters revolve around nuclear history in Japan, the United States, and Ukraine, and were written in such a way that when the app purposefully jumbles the chapters to form a new chapter sequence and therefore create a new reading experience each time, narrative coherence is still maintained. According to Bornet, his algorithmic analysis of the text as part of the app's development has introduced a formality to the writing process. He hopes his app addresses contemporary readers' changing tastes, which include preferences for shorter texts.

<http://swissinnovation.org/news/web/2014/10-140417-8c>

11. Technology Transfer / IPR / Patents

Switzerland is Ranked 2nd for Triadic Patent Families per Capita

(SERI, May 06, 2014)

Sets of patents filled in the three major patent offices (the European Patent Office, the Japan Patent Office and the United States Patent and Trademark Office) are called triadic patent families. 43 600 triadic patent families were filed alone in 2011, with Japan accounting for 31.4% of patent families, the USA for 29.0% and the European Union for 27.5%. However, the share of the European Union has been falling since 2000 and the origin of the patent families has been shifting towards Asian countries, especially Korea, China and India. Switzerland accounts for 2% of the total worlds triadic patent families filled. Expressed relative to the population, Switzerland ranks second behind Japan and followed by Sweden, Germany and Finland.



<http://swissinnovation.org/news/web/2014/11-140506-45>

Venture Leaders China: 10 Swiss Startups Announced

(startupticker, May 27, 2014)

The first edition of venture leaders China has announced the names of the 10 young, promising entrepreneurs selected to participate. The team of venture leaders will travel to Shanghai and Beijing in September for a 10-day market exploration visit, which will hopefully boost their understanding and penetration of the Chinese market. The growing opportunities and the exciting market prospects, make China an attractive market for Swiss high tech startups. Pascal Marmier, swissnex China CEO, commented the venture leaders China, "No entrepreneur can ignore Asia anymore, especially at a time when China and other countries' economic growth shift to an innovation-driven model. While remaining a challenging and complex environment, China offers market opportunities, world class expertise in production and supply chain as well as a competitive talent pool."



<http://swissinnovation.org/news/web/2014/11-140527-b1>

High Research Output in Switzerland

(NZZ, May 22, 2014)

An analysis of bibliometric data from 1981 to 2011 shows that Switzerland stands in a good position internationally as a research location. Switzerland is among the top 20 scientifically most productive countries, producing 3.6 publications per 1000 citizens per year, over 10 times the world average of 0.34 publications per 1000 citizens. The impact of the Swiss science publications is also high: 18.2% of the publications are found among the top 10% of the world's most cited articles. This is higher than the EU average of 11.6% and also higher than the US's 15.3%. Around 70% of publications are collaborations internationally.

<http://swissinnovation.org/news/web/2014/11-140522-ae>



Syngenta Pepper Patent Ignites Debate

(swissinfo, May 16, 2014)

Over 30 NGO's and farmers' and breeders' organizations from 27 European countries have filed an opposition to the European Patent Organization (EPO) against Swiss agribusiness giant Syngenta's patent for insect-resistant pepper plants. The coalition, which includes organizations such as Berne Declaration and Bionext, demands that the patent be revoked as it claims that such patents threaten plant diversity, food sovereignty, and farmer livelihoods. However, Syngenta insists that patents are fundamental incentives for innovation. The EPO is expected to decide on what is legally patentable by the end of 2014 but until then, such patents will remain in effect.



<http://swissinnovation.org/news/web/2014/11-140516-98>

12. General Interest

Shining a Light on Life and Death in Ancient Egypt

(University of Basel, April 29, 2014)

Researchers of the Kings' Valley Project, an archaeological research project of the University of Basel, have been working in Egypt's Valley of the Kings located near Luxor since 2004. In recent months the group's archaeologists have been examining an up to that point uncharted tomb. What was assumed to be a non-royal tomb turned out to be the burial place of several children as well as two other family members of two pharaohs. This conclusion was in part possible thanks to close examinations and analysis of inscriptions on storage jars found alongside the mummified remains inside the tomb. The research group led by Egyptologist Prof. Susanne Bickel hopes that further study of the tomb and its contents will allow new insights into the structure of the pharaonic court of the 18th dynasty as well as the life and death of its members.

<http://swissinnovation.org/news/web/2014/10-140429-7a>

13. Calls for Grants/Awards

Call: Award for Best Business Idea at startup.ch

(Swiss Startups Awards, May 14, 2014)

startups.ch awards for the fifth time the startups.ch Award to the best Swiss business idea in the small business sector. The winning project will be awarded with CHF 50'000 start-up aid for the not yet existing company. The finalists will be able to present their business idea before high-level professionals in September, before convincing a jury and the public in a second step about their business idea. The winner will be announced on October 30 at the ceremony of the Swiss Startups Awards in Zurich. Deadline for application is June 29, 2014.



<http://swissinnovation.org/news/web/2014/13-140514-f2>

Call for Applications: BCN Innovation Award 2015

(startupticker.ch, May 20, 2014)

Launched on the 125th anniversary of the Cantonal Bank of Neuchâtel (BCN), the BCN Innovation Award is one of Switzerland's largest prizes (CHF 300,000 per year). It aims to promote innovative scientific and technical projects created by young companies in the canton of Neuchâtel. The 2013 award was won by Ethical Skin Care AG, based at the Neode science and technology park in Neuchâtel. The company's three co-founders received CHF 300'000 for their "Zilooa" range of natural cosmetics. These innovative products are made with natural ingredients respecting the human body and preserving the environment, particularly the aquatic environment. Applications for the 2015 BCN Innovation Award can be submitted using the online application form. Deadline: January 31, 2015.

<http://swissinnovation.org/news/web/2014/13-140520-2e>

Call: Best Energy Projects for the Watt d'Or Award 2015

(startupticker, May 22, 2014)

The Federal Office of Energy seeks out to find the most innovative and forward-looking energy projects of Switzerland. The price is awarded since 2006 in following categories: society, energy technologies, renewable energies,



energy-efficient mobility, buildings and space. In order to enter the competition the projects must have been realized between August 2013 and July 2014. The deadline for application is July 31, 2014.

<http://swissinnovation.org/news/web/2014/13-140522-57>

Call for Abstracts: 3rd GRF One Health Summit 2014

(GRF One Health Summit 2014, May 30, 2014)

The 3rd GRF One Health Summit 2014 will take place from October 5-8 2014 at the Davos Congress Centre in Davos, Switzerland. A particular focus will be set on Global Health, Diseases and Disease Control, Environment and Health Impacts, Food & Agriculture, Global Change & Sustainable Development. The upcoming 3rd GRF One Health Summit 2014 aims to develop an international research and education strategy for One Health and to further develop and strengthen the One Health paradigm and its global movement as a trans- and interdisciplinary approach. In particular this 3rd global gathering will focus on the added value of a global One Health approach and a stronger involvement of the private sector and policy. Deadline: July 31, 2014.

<http://swissinnovation.org/news/web/2014/13-140530-60>

Upcoming Science and Technology Related Events

11th IASTED Conference on Biomedical Engineering

June 23-25, 2014

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

Biomedical Engineering

Zurich

World Innovation Day "Innovation for Health" (WID-I4H)

August 28-29, 2014

<http://i4h2014.world-innovation-day.com/>

Health

Geneva

TCI Conference «High Tech and Clusters»

June 25-27, 2014

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

Business and Technology

Bern

20th International Mass Spectrometry Conference

August 24-29, 2014

www.imsc2014.ch

Analytical Chemistry

Geneva

Startup Fair 2014

July 3, 2014

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

Startups

Zurich

BioTech 2014

September 4-5, 2014

www.biotech2014.ch

Bioprocess Analytics / Sensor Technology

ZHAW Wädenswil

Science Week - Naturwissenschaften erforschen

August 4-8, 2014

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

BioChemistry

Wädenswil

International Congress on Vocational and Professional Education and Training

September 15-18, 2014

<http://www.vpet-congress.ch/>

Vocational Education and Training

Winterthur

Industry Day 2014

August 26, 2014

<http://www.industryday.ethz.ch/>

Research/Innovation

Zurich

Zurich Game Festival

September 18-21, 2014

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

Computer game industry

Zurich

NTN Swiss Biotech TecDay

August 28, 2014

<http://www.swissbiotech.org/events>

Biotech

Basel



Micro and Nano Engineering 2014

September 22-26, 2014

www.mne2014.org

Micro and Nano Engineering

Lausanne

2nd International SystemsX.ch Conference

October 20-23, 2014

<http://conference.systemsx.ch/welcome/>

Biology

Lausanne

3rd GRF ONE HEALTH SUMMIT 2014

October 5-8, 2014

<http://onehealth.grforum.org/home/>

Health

Davos

European Antibody Congress 2014

November 10-12, 2014

<http://www.terrapinn.com/conference/european-antibody-congress/index.stm>

Biology

Geneva

Swiss Biotech Fall 2014: Biotech - Innovation Driver in Healthcare

October 7, 2014

<http://www.swissbiotech.org/events#event:853>

Biotech

Yverdon

3rd annual World Biosimilar Congress

November 11-12, 2014

<http://www.terrapinn.com/conference/biosimilar-congress/index.stm>

Drug development

Geneva

NanoBioTech Montreux

November 17-19, 2014

<http://www.nanotech-montreux.com/>

Preclinical drug development

Montreux

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