Science-Switzerland, April – May 2013

News on Swiss science, technology, education and innovation

Table of Contents

Switzerland on Top of World Competitiveness Ranking 2013

(IMD, May 30, 2013)

IMD announced its 25th anniversary world competitiveness rankings. In addition to ranking 60 economies for 2013, the IMD World Competitiveness Center also looks at the winners and losers since its creation. Top 3 are US, Switzerland and Hong Kong. The US has regained the No. 1 spot in 2013, thanks to a rebounding financial sector, an abundance of technological innovation and successful companies. The good performance of the US (1), Switzerland (2), Hong Kong (3), Sweden (4) and even Japan (24) – while the euro zone stagnates – calls austerity into question.
http://swissinnovation.org/news/web/2013/00-130530-18.html

1. Policy

Free Trade Negotiations Concluded on a Technical Level with China

(Swiss Government, May 13, 2013)

After their 9th round of negotiations, the delegations of Switzerland and the People's Republic of China concluded a free trade agreement between the two countries. The three-day negotiations were completed on a technical level. The Swiss delegation was headed by Ambassador Christian Etter, Delegate of the Federal Council for Trade, whereas the delegation of the People's Republic of China was headed by Assistant Minister Yu Jianhua, from the Chinese Ministry of Commerce. Federal Councillor Johann N. Schneider-Ammann held bilateral meetings with his Chinese counterpart, the Minister of Commerce Gao Hucheng. The free trade agreement remains to be examined by the Federal Council, and both sides will undertake a legal review of the agreement to finalize it for signing.
http://swissinnovation.org/news/web/2013/01-130513-7b.html

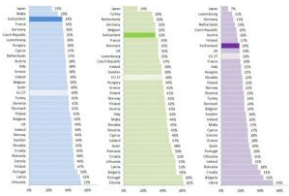
SNSF Supported Research with CHF 755M in 2012

(SNSF, May 06, 2013)

In 2012, the Swiss National Science Foundation (SNSF) was able to invest CHF 755 million in basic research, the highest amount in its sixty-year history. Compared to the previous year, this represents an increase of approximately six per cent. The SNSF approved more than 3500 research proposals to the tune of CHF 755 million. The budget was distributed as follows: 24% humanities and social sciences; 35% mathematics, natural and engineering sciences; 41% biology and medicine. In 2012, the SNSF supported 8750 researchers, half of whom were doctoral students. The SNSF invested more than half of its funds – CHF 391 million – in project funding, its main funding scheme. This money will enable numerous researchers to realise their projects.
http://swissinnovation.org/news/web/2013/01-130506-49.html

Persisting Underrepresentation of Women in Science

(SERI, April 25, 2013)



Although the proportion of female researchers in Europe is increasing, the underrepresentation of women in scientific disciplines and careers persists. Within the EU-27, women represent only 33% of researchers, 20% of full professors and 16% of heads of higher education institutions. The proportion of female researchers in the EU-27 varies considerably from one economic sector to another: while women hold nearly 40% of all research positions in the Higher Education Sector and 40% in the Government Sector, they hold less than 19% of all research positions in the Business Enterprise Sector. Although Switzerland falls within the EU average for the Business Enterprise Sector (19% of Swiss research positions held by women), it is clearly below the EU average for the Higher Education Sector (34%) and the Government Sector (33%).
http://swissinnovation.org/news/web/2013/01-130425-dc.html

Revisions to Federal Education Act

(SERI, April 10, 2013)

Through grants and student loans, the Swiss Federal Council wishes to improve equal opportunities in tertiary education and support cantonal efforts to harmonize the grant system. A recently completed consultation, involving 90 respondents, has shown that proposed revisions to the Federal Education Act, due to be debated in summer 2013, are broadly welcomed. The role of education and research in Switzerland should be strengthened overall, and the concerns expressed in the Association of Swiss Student Bodies' (VSS) "Grants Initiative" have been duly considered. The subject matter and scope of the law should remain unchanged, the existing grant distribution model continued, with no grant limits being set, and general and professional training receive equivalent levels of support.
http://swissinnovation.org/news/web/2013/01-130410-0c.html

Swiss Participation in "Erasmus for All"

(Swiss Government, April 26, 2013)

The commission for Education, Science and Culture of the Swiss parliament (WBK) has unanimously approved a CHF 305.5 million credit for the continued Swiss participation in the European programme for education, vocational training, youth and sports during the years of 2014 to 2020. Since 2011, Switzerland has been participating in the programme, due to be renamed to "Erasmus for All" starting 2014. Erasmus for All would bring together all the current EU and international schemes for education, training, youth and sport, replacing seven existing programmes with one. This will increase efficiency, make it easier to apply for grants, as well as reducing duplication and fragmentation. Up to 5 million people, almost twice as many as now, could get the chance to study or train abroad with a grant from Erasmus for All.
http://swissinnovation.org/news/web/2013/01-130426-46.html

New Law on Continuing Education Sent to Parliament

(Swiss Government, May 15, 2013)

The Federal Council adopted the dispatch on the new law on continuing education. The goal of this law is to foster the quality of continuing education in Switzerland. It lays out the framework for continuing education and supports the lifelong learning of adults. The law also regulates the preservation of basic competencies of adults. It plans to provide courses in reading, writing, mathematics and basic IT knowledge for people lacking those. As next step the Parliamentary will discuss and decide about this dispatch.
http://swissinnovation.org/news/web/2013/01-130515-c3.html

Renewable Energy and Resource Efficiency as Educational Pillars

(Swiss Government, May 15, 2013)

The Federal Council adopted a report about strengthening Cleantech competencies for vocational and professional education and training in Switzerland. Resource efficiency and renewable energies should become two import topics on all levels of the educational system. However, the report also notes that there are no new political measures necessary to enforce changes to the educational system.
http://swissinnovation.org/news/web/2013/01-130515-60.html

For an Open and Internationally Connected Educational System

(Swiss Government, May 28, 2013)

Federal Councillor Schneider-Ammann underlined his political priorities and principles on the occasion of a conference about vocational training. These are: an open and permeable educational system, internationally connected

educational institutions, a high degree of self-responsibility, competitiveness and cost awareness, but also the good partnership among the confederation, the cantons and the economy.
http://swissinnovation.org/news/web/2013/01-130528-96.html

CERN Council updates European strategy for particle physics

(CERN, May 30, 2013)

At a special meeting hosted by the European Commission in Brussels, the CERN Council formally adopted an update to the European strategy for particle physics. Since the original European strategy was put in place in 2006, particle physics has made considerable progress in elucidating the laws of nature at the most fundamental level. A very important issue for the strategy is preserving and building on the European model for cross-border research. CERN, in close collaboration with research institutions in the CERN Member States and under the guidance of the CERN Council, will coordinate future European engagement with global particle physics projects in other regions. The strategy notes that cross-border collaboration in science, as exemplified by the CERN model, pays dividends for Europe in terms of knowledge, innovation, education and training.
http://swissinnovation.org/news/web/2013/01-130530-24.html

2. Education

CHF 100 Million Donation for New Biotech Campus in Geneva

(EPFL, May 22, 2013)

Merck Serono's former site in the center of Geneva will become a hub for scientists involved in applied biomedical research. The site has been purchased by the consortium behind the Campus Biotech initiative: EPFL, UNIGE, Hansjörg Wyss, the Wyss Foundation and the Bertarelli family. The Wyss Foundation will donate CHF 100 million to establish a multidisciplinary Institute focusing on Bio- and Neuro-Engineering, aimed at developing biologically inspired solutions to solve critical medical problems and translating technologies into innovative, impactful products. Half of the 15,000 m2 site will be occupied by the Wyss Institute and half by EPFL and UNIGE research groups. Campus Biotech will also welcome start-ups, industry and other businesses keen on stimulating R&D and job creation in biotechnology.
http://swissinnovation.org/news/web/2013/02-130522-74.html

New Institute for Theoretical Studies for Top Talents

(ETH Zurich, May 15, 2013)

ETH Zurich is setting up a new Institute for Theoretical Studies (ETH-ITS) which will offer sabbatical placements to top academics from all over the world. This has been made possible thanks to two outstandingly generous donations made by ETH alumnus Max Rössler and the Walter Haefner Foundation, each of whom have pledged 25 million Swiss francs to ETH Zurich Foundation. The new Institute for Theoretical Studies will invite top academics from the fields of mathematics, theoretical natural sciences and theoretical computer science to ETH Zurich and offer them a sabbatical placement for a period of up to one year. Between four and six Senior Fellows will be appointed to inspire ETH researchers and students, providing additional stimulation and enrichment to Switzerland's higher education landscape.
http://swissinnovation.org/news/web/2013/02-130515-3e.html

Franklin College Switzerland Receives Swiss University Institution Recognition

(Franklin College, April 18, 2013)

The Swiss University Conference [SUK/CUS], which is the governing body for higher education in Switzerland, granted Franklin College Switzerland full university institution accreditation at its April 18, 2013, meeting. The Swiss Center of Accreditation and Quality Assurance in Higher Education (OAQ) stated in its Expert's Report and Recommendation to the Swiss University Conference (CUS) that "The group of experts recommends accreditation of Franklin College Switzerland, without conditions. In 2005 the Swiss University Conference granted Swiss university institution accreditation to all of Franklin's programs of study leading to the Bachelor of Arts degree—making Franklin the first and only non-Swiss-based university to receive such recognition. In providing Franklin full institutional university accreditation at its the CUS assured Franklin the distinction of being the only university fully accredited in both the United States and Switzerland.
http://swissinnovation.org/news/web/2013/02-130418-df.html

Education for Sustainable Development

(Education21, April 01, 2013)

Education for Sustainable Development (ESD) has an identity in Switzerland: éducation21. On behalf of the cantons, the federal government and civil society éducation21 supports the implementation and consolidation of ESD. It takes over from the Foundation for Education and Development and the Foundation for Environmental Education, which focussed on global and environmental education respectively. In addition, éducation21 concerns itself with health and political education including human rights and economics. éducation21 aims to help prepare children and adolescents for their future in an increasingly complex world.
http://swissinnovation.org/news/web/2013/02-130401-9d.html

Unified Library Search

(ETH Zurich, April 03, 2013)

ETH Zurich, the University of Zurich, and the city of Zurich recently completed an expansion of inter-library search capabilities, adding 70 new Zurich libraries to an information system that allows a user to make a single query across all libraries. About 140 libraries across Switzerland participate in the federated search system, giving users access to over 7 million titles. Users can also borrow books from any library using just a single library account. To further expand the system, project leaders are looking into an inter-library courier service so that any title can be picked up at any library.
http://swissinnovation.org/news/web/2013/02-130403-b5.html

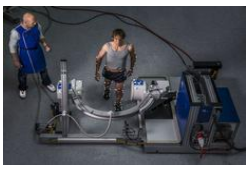
Promotion of Young Researchers – A Priority

(NZZ, April 16, 2013)

Martin Vetterli, President of the National Research Council for the 2013-2016 period expressed his priorities and some ideas in a newspaper article. E.g. the Swiss National Science Foundation might strengthen the network among SNSF alumni to foster the brain circulation back to Switzerland. Regarding this idea swissnex (and the ERI-Net as a whole) might certainly play a role in the future. Martin Vetterli is full professor for communication systems and dean of the School of Computer and Communication Sciences at EPF Lausanne and he is member of the swissnex Committee.
http://swissinnovation.org/news/web/2013/02-130416-4a.html

ETH Zurich Annual Report 2012

(ETH Zurich, April 17, 2013)



The current annual report of the ETH Zurich has now been published. Key strategies have been implemented in the course of the last year, for example in the area of the Life Sciences. The report shows this by providing detailed facts and numbers on the university. Introduced only in 2010, the "Life Sciences and Technology" program is already the third most popular choice of students. The ETH Zurich also established two new research centers in 2012: The new supercomputing center CSCS in Lugano-Cornaredo, and the Future Cities Laboratory in Singapore. Other key numbers include a headcount of 17'781 students and 10'242 employees, including 482 professorships. The budget amounts to CHF 1467 million.
http://swissinnovation.org/news/web/2013/02-130417-cb.html

Studying in Switzerland 2013 Guide

(CRUS, April 25, 2013)

The Rectors' Conference of the Swiss Universities published an updated version of "Studying in Switzerland: Universities, 2013". The guide contains all the important information for anybody considering to study in Switzerland. It outlines the Swiss education system and lists the subjects offered by the Swiss Universities.
http://swissinnovation.org/news/web/2013/02-130425-75.html

University of Berne Annual Report 2012

(UNIBE, April 29, 2013)

The University of Berne counts approximately 16'000 students, 3.5% more than in the previous year. On the financial side, the University had an income of 753.9 (+15.9) million Swiss Francs, of which 218 (+9) million were provided by third-party funds. One highlight of 2012 was the new ESA satellite that will be used to investigate planets outside of our solar system. The annual report 2012 of the University of Berne is available online in German.
http://swissinnovation.org/news/web/2013/02-130429-65.html

International Symposium in St. Gallen Encourages Entrepreneurship

(bilan.ch, May 01, 2013)

For 43 years, students from St. Gallen University have been organizing a "mini-Davos" symposium that enjoys international recognition. The idea was born after the student protest movement of May '68. Five students decided to run an annual conference on campus to enable constructive intergenerational and intercultural dialogue among the leaders of today, tomorrow and the future. At one of the world's largest student meetings, 200 university students from over 70 countries and 600 personalities from business, politics and academia meet in a relaxed, open atmosphere to generate new ideas. Volunteers on the International Student Committee manage all aspects of the event, including technology, logistics and catering, thereby gaining hands-on experience of entrepreneurship. It is fully funded by 400 supportive companies.
http://swissinnovation.org/news/web/2013/02-130501-4d.html

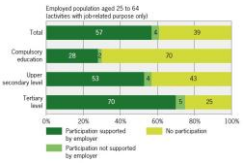
University of Basel Annual Report 2012

(UNIBAS, May 07, 2013)

The University of Basel has published the Annual Report for the year of 2012 online. The report shows, that the University closed the financial year of 2012 with a small surplus. The University also adopted a strategy for 2014. In 2012, more new students joined the University, leading to an increased headcount. For the last time, the Swiss diploma examinations were conducted, and now the conversion to the Bachelor / Master system has been completed. Furthermore, 28 doctoral programs have been established.
http://swissinnovation.org/news/web/2013/02-130507-94.html

Large Participation in Continuing Education Statistics

(SERI, May 17, 2013)

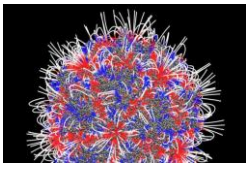


Swiss federal statistics show that a large majority of Swiss adults participate in some form of continuing education, either informal learning or non-formal education. The former consists of individual activities and the latter consists of non-degree granting education taught by a teacher. Most of this continuing education is supported by an employer, and employees with a higher level of education tend to participate more in continuing education than those with a lower level of education.
http://swissinnovation.org/news/web/2013/02-130517-e8.html

3. Life Science / Health Care

Nanoparticles Fight Human Viruses

(ArsTechnica, April 01, 2013)



Biology and nanotechnology are converging, e.g. enabling nanoparticles to deliver stem cells in cardiac therapy. Swiss researchers at the University of Applied Sciences and Arts Northwestern Switzerland have developed nanoparticles that detect and potentially combat viruses. Human immune systems respond to invading viruses by producing virus-specific antibodies that usually eliminate them. An alternative is to develop artificial antibodies by finding the infectious agent, imprinting copies of it onto a silica nanoparticle (SNP), coating it with a layer of polymer (organosiloxane) to make a "virus imprinted particle" (VIP) and using this "mold" to trap the virus. VIPs will first be used as diagnostic tools and then, if successful in clinical trials, for therapy. The challenge will be to mass-produce them quickly.
http://swissinnovation.org/news/web/2013/03-130401-be.html

Cancer Metabolism Influenced by Specific Protein

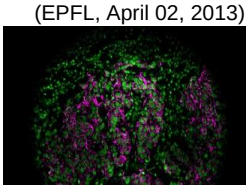
(UNIGE, April 01, 2013)

TRAP1 protein, expressed in various cancers and known for its cytoprotective properties, is considered a potential target for anti-cancer therapies. However, recent studies undertaken at the National Cancer Institute, in Bethesda (USA) and the University of Geneva (UNIGE) and published in the journal PNAS, show that TRAP1 disrupts the metabolism of malignant cells and that its expression is inversely correlated with tumor stage in different types of cancer. TRAP1 regulates a metabolic 'switch' at the level of glucose digestion. Suppressing TRAP1 causes the metabolic pathway to change to a more powerful one, with high energy output and high oxygen consumption, sig-

nificantly increasing the motility and invasiveness of cells. Thus, therapies designed to inhibit TRAP1 may stimulate tumor progression to metastasis.
http://swissinnovation.org/news/web/2013/03-130401-72.html

High-Speed Diagnosis for Breast Cancer with Microfluidic Chip

(EPFL, April 02, 2013)



In collaboration with the Institute of Pathology at the Lausanne University Hospital (CHUV), EPFL has developed a new in vitro system which can make an accurate assessment of breast cancer within minutes. The microfluidic chip analyzes the risk of metastasis by identifying the presence of abnormal proteins. When antibodies attach to the HER2 proteins of cancerous tissue, detection by fluorescence is then possible. The chip irrigates the entire sample evenly which ensures attachments between antibodies and targeted proteins are proportional. Through this precise analysis, healthcare providers can prescribe customized treatment, which combined with chemotherapy is incredibly effective. This new method of analysis could also be testable in other biomarkers involving different types of cancers.
http://swissinnovation.org/news/web/2013/03-130402-d0.html

Fast, Precise Chemical Breath Analysis

(ETH Zurich, April 04, 2013)

Bodily fluids like blood and urine reveal a person's health status, but their collection and analysis is time-consuming. Researchers at ETH Zurich and the University Hospital Zurich have developed an instrument-based version of the long-known principle in traditional Chinese medicine that the smell of exhaled breath indicates health. A constant, specific molecular "fingerprint" has been identified in exhaled human breath using mass spectrometry. This technology could also enable identification of characteristic patterns of diseases. Chemical breath analysis is fast, precise and non-invasive. With improved performance, existing portable mass spectrometers could be used in clinics and doctor's offices to diagnose diseases like infectious and metabolic diseases, cancer and organ failure, or monitor the progress or side effects of on-going medical therapies.
http://swissinnovation.org/news/web/2013/03-130404-ba.html

Smoking Cannabis can Trigger Psychosis

(20min.ch, April 04, 2013)

Researchers at the Psychiatric Hospital of the University of Basel (UPK) have found evidence that smoking cannabis can lead to brain shrinkage. Most previous related studies used small data sets, preventing reliable conclusions from being drawn. The research team combined data from all published studies worldwide, involving more than 1,000 cannabis-smoking psychosis patients. The meta-analysis showed that smoking pot may change brain structure – an effect previously known only from harder drugs like ecstasy and cocaine. Although smoking pot is not the only reason for a psychosis, it may be the trigger in certain cases. These research findings are important, since teenagers and young adults often underestimate the risks of cannabis use and more effective prevention strategies are needed.
http://swissinnovation.org/news/web/2013/03-130404-e8.html

Our Ancestor's Chest and Feet were not made for Running

(UZH, April 11, 2013)

In six new studies, researchers from the Wits University in South Africa and the University of Zurich describe the anatomy of a unique early hominin. Fossils of Australopithecus sediba were discovered in 2008 in Malapa near Johannesburg. The studies, published in "Science", explain how our two-million-year-old ancestor walked, chewed and moved. Since the fossils show a mixture of primitive feautres of Australopithecus and advanced features of later human species, they probably come from a direct ancestor of our own Homo genus. Their ape-like narrow upper chest allowed scapula movements, essential for climbing trees, but restricted energy-saving arm swinging when upright or running. Their unique lower leg structure enabled varied movement. These findings highlight the huge variation among early hominins.
http://swissinnovation.org/news/web/2013/03-130411-ec.html

New Drug to Treat Intestinal Worms

(20min.ch, April 12, 2013)

Researchers at the Swiss Tropical Institute in Basel have successfully tested Tribenidimidin, a new worm treatment that produces no unwanted side effects. This gives hope to over a billion intestinal-worm-infected adults and children worldwide, many presenting symptoms like weight loss, lethargy and mental retardation. In clinical trials among 123 patients in China, Tribenidimidin cured 92% of infections acquired from soil roundworms. This compares well with outcomes from treatment with the standard drug albendazole. Encouraging results were also achieved against the dwarf tapeworm and roundworm, which were eradicated in 55% and 67% of infected participants. Testing is now required in larger populations, in different regions and at multiple dosages. This is urgently needed to counter the parasites' growing resistance to existing treatments.
http://swissinnovation.org/news/web/2013/03-130412-71.html

Swiss Biotech Report 2012

(swissbiotech.org, April 13, 2013)

The biotech industry looks back on an eventful year. The good news is that net sales remained stable despite the European debt crisis. The not-so-good news concerns the restructuring measures that were taken last year by certain large biotech firms. The biotech activities of Swiss companies remain, as before, consistently high. This is revealed by the high number of products in the clinical pipeline.
http://swissinnovation.org/news/web/2013/03-130413-22.html

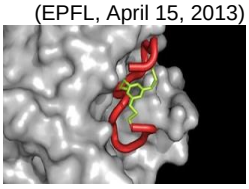
Biomechanical Device to Measure Tissue Consistency

(ETH Zurich, April 15, 2013)

A high-tech aspiration device with an integrated mini-camera, developed at the ETH Zurich, records changes in human tissue consistency. This subproject of the National Centres of Competence in Research (NCCR) CO-ME (Computer-aided and image-guided medical interventions) could spur innovation in diagnostic techniques. Gynecologists and surgeons use their sense of touch to check the condition of their patients' organs. Palpation of the cervix in pregnant women detects unusual texure that may signal complications, and palpation of tumors during surgery enables their size to be estimated. By measuring negative pressure, the device complements palpation and ensures more precise assessments of tissue quality. A special version used in minimally invasive surgery has generated comprehensive data on various organs, providing valuable input for computer-aided medicine.
http://swissinnovation.org/news/web/2013/03-130415-78.html

Peptides for the Treatment of Severe Diseases

(EPFL, April 15, 2013)



A new class of drugs for the treatment of severe diseases such as cancer and autoimmune diseases has been developed by the start-up Bicycle Therapeutics. Based in Cambridge MA, the company is supported with knowhow and a patent licensed from the EPFL. It generates bicyclic peptides that can selectively bind disease-related proteins and inhibit their growth, while leaving healthy cells intact. New molecules known as monoclonal antibodies are particularly effective in treating certain types of cancer and autoimmune diseases like rheumatoid arthritis, but have numerous limitations mainly due to their size. The new therapeutic agents have similar binding qualities to monoclonal antibodies, but are approximately 100 times smaller, can be chemically synthesized and are more effectively disseminated throughout tissues.
http://swissinnovation.org/news/web/2013/03-130415-47.html

First Multi-resistant Grape Variety

(Swiss Government, April 15, 2013)

Since 1996, research has focused on developing new grape varieties that resist major fungal diseases. Successful varieties like Gamaret, Garanoir, Diolinoir, Carminoir and Galotta, selected by Agroscope for their potential quality and resistance to grape rot, are now followed by Divico, a new red variety highly resistant to mildew, powdery mildew and botrytis. Divico, named after the legendary Swiss leader, opens the way to greener viticulture by drastically reducing pesticide use. Divico (code RAIC 2091) is the result of crossing Gamaret with Bronner, which carries genes for resistance to mildew and oidium from American and Asian wild vines and underwent crossing with European varieties to improve its quality. Divico, promising a rich wine color and high-quality tannins, will launch in 2015.
http://swissinnovation.org/news/web/2013/03-130415-a0.html

Controlled Transfer of Proteins by Light Trap

(ETH Zurich, April 17, 2013)

Researchers at ETH Zurich developed a technique for trapping and then releasing proteins in a control way using light. The method uses Phytochrome B from the plant *A.* _thaliana_ and its Phytochrome Interacting Factor to trap a target protein. When this combination is later illuminated with far-red light, the target protein is released. Thus, this mechanism can be used to transfer proteins to specific locations and then release them without a chemical signal.
http://swissinnovation.org/news/web/2013/03-130417-b8.html

Artificial Sphincter against Incontinence

(UNIBAS, April 18, 2013)

Incontinence seriously affects a person's quality of life. It represents a double burden because of its unpleasant symptoms and social stigma. While mild forms can be treated with medication, severe cases require surgery to repair damage to the sphincter or the implantation of an artificial sphincter. However, today's sphincter implants that generally function hydraulically have serious disadvantages: they exert excessive, constant pressure on the tissue, often causing anal injuries. Moreover, elderly patients struggle to use them. Researchers at the University of Basel plan to develop an adaptive implant that can contract and relax like a natural muscle, e.g. automatically increasing pressure during coughing. The national nanotechnology funding initiative Nano-Tera.ch will provide CHF 2.2 million to support this interdisciplinary R&D project.
http://swissinnovation.org/news/web/2013/03-130418-f7.html

New Treatment Saves Knocked-out Teeth

(20min.ch, April 19, 2013)

Researchers at the University of Basel have tested a novel treatment that makes broken teeth regrow better after an accident. In Europe, half of children aged under 16 have an accident that damages their teeth. With proper treatment, a knocked-out tooth can be saved and re-inserted, but the nerve connecting the root to the jaw is permanently damaged. Particularly in children six to nine years old, permanent teeth are underdeveloped, so cannot grow without a nerve and risk falling out again. The new therapy, successful in 33% of treated patients, involves reinserting the tooth, removing the dead nerve inside, and making a tiny injury to the jaw, which causes scar tissue to grow into the tooth from below. This increases its stability.
http://swissinnovation.org/news/web/2013/03-130419-d1.html

New Eawag Research Boat

(Eawag, April 22, 2013)

Celebrating the former Director of Eawag, Otto Jaag, has his legacy live on through a new boat. The eponymous boat was officially launched in remembrance of Otto Jaag's Directonship of Eawag from 1952 to 1970. Eawag had researched the Greifensee lake for decades, recording, among other things, how the lake has recovered from the pollution of the 70s and 80s. In addition, Eawag has supported projects on Greifensee for many years as well as educating ETH students on the lake. The boat set sail on the Open Day of the Schifffahrtsgesellschaft Greifensee (Greifensee shipping company). The Eco department team was available to offer the public an insight into the Greifensee research by peering through microscopes at daphnia and asking questions of the Eco crew during the celebration.
http://swissinnovation.org/news/web/2013/03-130422-0d.html

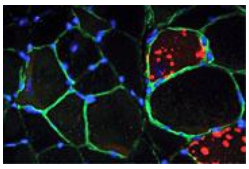
Progress towards a New Vaccine against Tuberculosis

(UZH, April 22, 2013)

The microbiologist Peter Sander has developed a bacterial strain that produces enhanced immune responses against the tuberculosis pathogen. His research, supported by the University of Zurich, the Swiss National Science Foundation and the EU, raises hopes of marketing an improved vaccine against the disease within a decade. About four million doses of Mycobacterium bovis BCG vaccine have been administered against tuberculosis since 1921. However, its effectiveness is unreliable, particularly in adults, its protective effect varying from 0-85%. Around two billion people are infected worldwide and 1.4 million people die annually from tuberculosis. Antibiotic therapy is tedious and expensive, and antibiotic resistance is spreading. Prevention is a wiser strategy. The modified M. bovis BCG zmp1 vaccine is currently undergoing clinical trials.
http://swissinnovation.org/news/web/2013/03-130422-bb.html

Protein Regulates Autophagy in Muscles

(UNIBAS, April 22, 2013)



The mTORC1 protein complex regulates muscle growth. However, when permanently active, it reduces cell self-purification and weakens muscles. As reported in the journal "Cell Metabolism", scientists from the Biozentrum, University of Basel have described the exact mechanism responsible. Over time individual cell components wear out. For the cell to remain healthy, faulty components and waste materials have to be removed or recycled regularly. A cellular self-cleaning process called autophagy ensures this. With age, the capacity for self-renewal decreases, causing many age-related diseases like cancer, heart disease and muscle weakness. mTORC1 regulates not only growth, but also autophagy, balancing muscle building and dismantling. Investigating mTORC1 regulation could therefore provide new therapeutic approaches to counteract the age-related disintegration of muscle structures.
http://swissinnovation.org/news/web/2013/03-130422-4d.html

Successful Biomarker Identification Partnership

(Debiopharm, April 24, 2013)

Oncotest GmbH and Debiopharm Group™ (Debiopharm) a Swiss-based global biopharmaceutical group, are pleased to announce the successful completion of the first biomarker projects at Oncotest. In a recent study, pharmacological data was generated with Debiopharm's investigational compound in Oncotest's 3D assay system for patient-derived xenografts and correlated with the extensive Oncotest's genomic and transcriptomic data. The collaboration resulted in the identification of several predictive biomarkers candidates including a gene signature.
http://swissinnovation.org/news/web/2013/03-130424-24.html

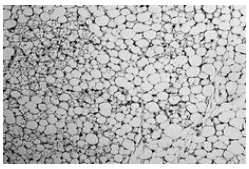
Secure Genome Storage and Interpretation

(EPFL, April 24, 2013)

Complete sequencing of the human genome will soon enable personalized treatments and new prescription drugs based on genetic markers to be developed. As the cost of DNA analysis falls, it may even be possible to identify individuals' predisposition to certain diseases, allergies, and food intolerances. Yet questions remain about how to interpret genome sequence data and store them securely. Sophia Genetics, an EPFL Science Park start-up, has standardized and automated data analysis and storage. Its bioinformatics tool, already used by a dozen hospitals and laboratories in Switzerland, enables a DNA sample to be taken during a medical examination and sent to a specialized laboratory for extraction. Once sequenced, data is transmitted to Sophia Genetics for bioinformatics analysis, interpretation and secure storage.
http://swissinnovation.org/news/web/2013/03-130424-7a.html

White and Brown Fat Cells Conversion to Treat Obesity

(ETH Zurich, April 29, 2013)



Scientists in the laboratory of Christian Wolfrum, a professor at the Institute of Food, Nutrition and Health, have released for the first time, the sight of conversion between brown adipocyte cells and white fat cells in a living organism. "Brite" fat cells which are brown cells formed within white fat depots will burn fat energy and sugar, whereas white fat cells store fat in times of calorie abundance. Increasing the brown adipocyte cells in obese humans could accelerate weight loss. By investigating the origins of brown fat cells, researchers exposed mice to cold temperatures which affected the mice in forming brown adipocytes in their white fat cells, whereas mice exposed to warm temperatures formed white fat tissue cells again. Thus, white fat cells and brown fat cells are interchangeably converted in mice with the possibility of a similar application process in humans. In contrast to ineffective pharmaceutical treatments, this novel approach could treat obesity on an energy expenditure focus by promoting brown fat cell formation.
http://swissinnovation.org/news/web/2013/03-130429-9d.html

Ban on Major Pesticide May Alleviate Bee Population Loss

(swissinfo.ch, April 30, 2013)

The European Commission passed a two year ban on a class of pesticides knows as "neonicotinoids" due to possible lethal damage to the honeybee population. Disagreement still exits among scientists, chemical companies and the public as to the cause of the declining bee population, however, the ban was welcomed by Greenpeace Switzerland. Nevertheless, Chief Operating Officer, John Atkin of Syngenta, the world's largest maker of crop chemicals,

claims the proposal is based on poor science and ignores other evidence that these pesticides don't damage the honeybee population. For the next two years, beginning in December 2013, the ban will affect the use of neonicotinoid based substances on all crops, excluding winter cereals and plants, which are not attractive to bees or harvested before bloom.
http://swissinnovation.org/news/web/2013/03-130430-08.html

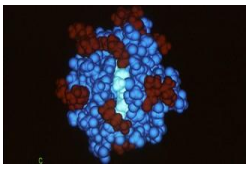
Activity and Life-Time Boost by a New Antioxidant

(ETH Zurich, May 06, 2013)

Silica particles offer a versatile scaffold to develop highly efficient antioxidant SiO_2 - gallic acid hybrid nanomaterials, by covalent grafting of gallic acid antioxidant molecules on the SiO2 surface. This allows an independent control of the antioxidant activity and it inhibits the deactivation of the gallic acid. This makes such a novel antioxidant compound superior for applications like cosmetics and nutrition. ETH Zurich is looking for a licensing or collaboration partner for the presented opportunity.
http://swissinnovation.org/news/web/2013/03-130506-f0.html

Identification of 3D Protein Structures with Infrared-UV Laser Method

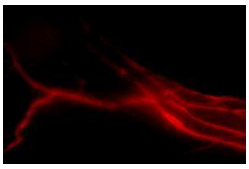
(EPFL, May 13, 2013)



Complex 3D structures of biological molecules like proteins directly affect their behavior in our bodies. As reported on the cover of 'Angewandte Chemie', EPFL scientists have developed a new infrared-UV laser method to more accurately determine the structure of proteins containing thousands of atoms. Identifying 3D structures is important because the resultant molecule behavior in cells could make the difference between life and death; e.g. mad cow disease is caused by the misfolded version of an otherwise harmless prion protein. Determining 3D structures is challenging, because biological molecules often exist as isomers, i.e. with the same atom sequence but different structures, causing radically different effects. This new approach has huge implications for i.a. biotechnology, clinical diagnostics, epidemiology, molecular biology and genetics.
http://swissinnovation.org/news/web/2013/03-130513-da.html

New Imaging Gives Insight into Tumors' Travels in Body

(ETH Zurich, May 13, 2013)



Through a high-resolution imaging system which makes lymph nodes highly visible, researchers from ETH Zurich have come one step closer to understanding how cancer forms and travels through the body. They found that a developing tumor blocks the lymphatic system's normal paths, creating a sort of bypass. That discovery could help doctors spot and diagnose metastasising cancers earlier. Cancer has long been known to stimulate the growth of blood and lymph vessels, but this is the first time it has been found to alter the circulation of the lymphatic system itself. Researchers made the discovery by injecting mice with a fluorescent substance and observing, under infrared light, how it travelled through the animal's lymphatic system. Tiny details, down to the valves of blood vessels, were visible to scientists. The new method for viewing tumors is less complex than the current "positron emission tomography" test, which shows each organ in three dimensions. Scientists are already planning clinical trials to test their finding in humans.
http://swissinnovation.org/news/web/2013/03-130513-26.html

Positive Effect of Apartment Height on Health

(UNIBE, May 14, 2013)

Researchers at the University of Bern released a study using the Swiss National Cohort dataset that examines the health benefits of living on a high floor of a building versus at ground level. Those at a greater height generally had better health and lower risk of death from cardiological and lung related diseases. The exact cause of this connection is not known, but socioeconomic factors which could not be accounted for are suspected. The one place where residents of high apartments fared less well was in deaths from high falls.
http://swissinnovation.org/news/web/2013/03-130514-6a.html

Protein Boosts Marathon Runners' Performance

(UNIBAS, May 14, 2013)

Despite their greater muscle mass, sprinters cannot win a marathon because their muscles, specially trained for strength, fatigue faster than long-distance runners' muscles, trained for endurance. As published in the journal PNAS, researchers at the University of Basel's Biozentrum have shown that during aerobic exercise the protein PGC-1α modifies metabolism in muscle. Since marathon runners undergo special training to improve performance

and endurance time, their muscles produce sufficient energy over long periods by using oxygen. However, untrained and strength athletes quickly reach a condition in which their muscles produce energy without oxygen. This produces lactate, causing muscle fatigue. PGC-1α, produced during endurance training, prevents lactate formation and accumulation in muscles. Endurance sports therapy might benefit diabetics with disturbed lactate metabolism.
http://swissinnovation.org/news/web/2013/03-130514-00.html

Multiresistant Bacteria are Spreading

(UZH, May 16, 2013)

University of Zurich researchers have found increasing numbers of antibiotic-resistant bacteria in Swiss waters, human intestines and animals. Beta-lactam antibiotics, available in different drug classes, are an integral part of human medicine; they block a vital function in bacteria, without causing side effects in humans. They include broad-spectrum antibiotics, effective against many bacteria types. However, bacteria are mutating into more sophisticated variants, which antibiotics can no longer treat. Multi-resistant bacteria are resistant to more than three classes of antibiotics. The study, published in Applied and Environmental Microbiology, revealed that 36% of water samples taken below 1,000m contained multi-resistant organisms, with urban areas and the Rhine being worst affected. 6% of the population hosts multi-resistant bacteria. Antibiotic use urgently needs rethinking.
http://swissinnovation.org/news/web/2013/03-130516-c8.html

Proteome Atlas for the Tuberculosis Pathogen

(ETH Zurich, May 16, 2013)

Scientists at ETH Zurich developed an atlas of the coordinates of all the proteins in the tuberculosis proteome. This reference makes other research of this bacterium much easier because individual proteins don't need to be searched out each time; the coordinates from the atlas can be used to look at a specific protein. Creating this atlas even led to the discovery of several new proteins. Tuberculosis research continues to be important because it is still a dangerous disease for some and resistant strains exist. Treatments for the disease typically focus on certain proteins.
http://swissinnovation.org/news/web/2013/03-130516-5a.html

Insecticides Lead to Starvation of Aquatic Organisms

(Eawag, May 16, 2013)

In response to the declining population of bee colonies, the EU imposed a 2-year ban on the use of neurotoxic agents belonging to the neonicotinoid group. The Federal Office for Agriculture (FOAG) in Switzerland has banned three insecticides used in oilseed rape and maize fields. Likewise, in an Eawag study published in the journal PLOS ONE (Public Library of Science) it was noted that at least one of the insecticides in this class also has toxic effects on freshwater invertebrates. While organisms transferred to clean water after pulsed exposure recovered rapidly, constant exposure led to starvation after 2 to 3 weeks. Because the organisms' mobility and feeding behavior was impaired by the neurotoxin, the research team has developed a mathematical model which makes it possible to predict harmful concentrations and exposure times.
http://swissinnovation.org/news/web/2013/03-130516-22.html

Important Symbiosis between Coral and Algae

(EPFL, May 17, 2013)

Researchers at EPFL are investigating new evidence of the vital role that algae plays in the survival of coral which shows a classic example of biological symbiosis, i.e., a mutually beneficial relationship between the two species. Using an advanced high-resolution imaging instrument, Anders Meibom and his team in the Laboratory for Biological Geochemistry have found that algae help corals assimilate certain nutrients, such as nitrogen from seawater, as sea temperatures rise, which makes survival difficult. Teaming up with Aquarium Tropicale du Palairs de la Dorée in Paris, both research teams ran a series of experiments where corals were fed nitrogen-rich compounds, then producing a timeline of images on how the coral processes the nitrogen. The research team revealed that the algae acted as a tiny food bank for their coral hosts by storing nitrogen in the form of uric acid crystals while leaching out excess nutrients to their coral hosts.
http://swissinnovation.org/news/web/2013/03-130517-17.html

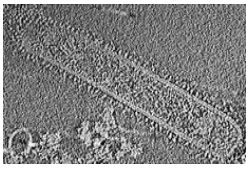
Unique Tomography of Living Cells

(startupticker.ch, May 17, 2013)

NanoLive is a unique, proprietary technology for tomography of living cells, being developed at the EPFL by co-inventors Dr. Yann Cotte and Dr. Fatih Toy and their team. Unlike other currently available systems for examining cells, NanoLive uses only non-invasive light, and avoids any preparation of the sample that can interfere with cellular activities. A prototype called the 3D Cell-Explorer is under construction. As winner of the BioInnovation Day Award, NanoLive receives a check for 10,000 Swiss francs, as well as support from Eclosion, with a view toward creating a company to commercialize the technology.
http://swissinnovation.org/news/web/2013/03-130517-3b.html

Learning from Virus Entry into Cells and Replication

(ETH Zurich, May 21, 2013)



Respiratory syncytial virus is spreading rapidly throughout the world and mutating quickly while it does so. Developing a vaccine is difficult because of the rapid mutation, and therapies are very expensive. Researchers at ETH Zurich have been studying how this virus enters human cells, and have discovered that it uses cells' own reflexes to make them accept the virus. A certain signal causes a cell to transform and take in the virus. Once inside, molecular shears cut open the virus and release RNA, allowing the virus to replicate. The most promising treatment attempt so far involves inhibiting the molecular shears that release the RNA.
http://swissinnovation.org/news/web/2013/03-130521-38.html

Vital Sign Monitor Platform awarded

(startupticker.ch, May 22, 2013)

Biovotion was given a prestigious eHealth EU SME competition silver award, at the eHealth week 2013 in Dublin, Ireland for the development of its Vital Sign Monitor (VSM) platform. The awardees were selected by an international panel of eHealth experts, venture capital investors and industrial representatives, during the biggest European eHealth conference, which brings together more than 3000 international attendees from industry, healthcare, academia and politics. Participation also includes major European political leaders. Biovotion's (VSM) is a wearable multi-sensor platform which can be placed on the arm for continuous non-invasive monitoring of physiological parameters. Measurements are securely transmitted to a portable device, such as a smartphone, for further processing and transmission into cloud storage. As a result of increasing health care costs and patients wish for adequate monitoring, the VSM platform shows parity with standard hospital based systems and patient everyday use.
http://swissinnovation.org/news/web/2013/03-130522-d4.html

Mayan Medical Practices Investigated in Oncology

(ETH Zurich, May 22, 2013)

Supported by ETH Life, eight Mayan physicians from Guatemala are visiting the ETH Zurich to share their experience with Western doctors and scientists. Whereas advanced medical technology is widely used in Switzerland, the Maya use fire rituals, traditional ceremonies and plants to treat patients. It is unclear whether reported improvements in their condition stem from believing that healers are helping them, from using certain plants, or from a combination of both. The MACOCC project (Maya and contemporary scientific conceptions of cancer), an international collaboration under the ETH Zurich, is the first scientific study to investigate how the Maya diagnose and treat cancer. Great progress could be made in combating cancer if Western doctors and Mayans work together to find solutions.
http://swissinnovation.org/news/web/2013/03-130522-39.html

Award for Biocompatible Implant Surface

(startupticker.ch, May 23, 2013)

Nano Bridging Molecules received the Frost & Sullivan Technology Innovation Leadership Award. Their unique solution produces a monolayer of permanently bound multiphosphonate molecules on titanium implant surfaces. The multiphosphonate molecules contain phosphate molecules which are an essential component of bone resulting in minimal biocompatibility issues. SurfLink® aids in up to 43 per cent quicker bone healing around the implant, and up to 32 per cent enhanced early fixation of the implant. SurfLink®'s properties allow it to be used for hip and knee replacements as well as replacement of other joints, such as the elbow and shoulder. It can

also provide a solution for problems of the spinal cord, such as collapsing vertebrae. The technology has already received European CE Marking as a dental implant product and NBM has received ISO 13485 certification for quality management system practices.
http://swissinnovation.org/news/web/2013/03-130523-9c.html

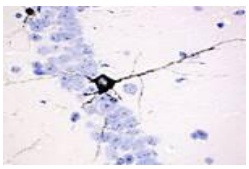
Antibiotics May Extend Longevity

(EPFL, May 23, 2013)

Johan Auwex and his EPFL researchers report in the journal “Nature” how longevity through the application of antibiotics in nematodes, or roundworms, can make a lifespan multiply by a factor of 1.6. The team analyzed mice genomes and found a group of three genes situated on a chromosome had not been suspected of playing any role in aging. Subsequent to a 50 percent reduction in the expression of these genes and concurrently a reduction in the proteins they code for has shown an increased mouse life span of about 250 days. Scientists have determined that the presence of mitochondrial ribosomal proteins (MRPs) are inversely proportional to longevity. Observations have also shown that the mechanisms in worms should be similar to those in mice, and therefore, similar in other mammals.
http://swissinnovation.org/news/web/2013/03-130523-9f.html

Tauopathies: New Findings on the Spread of Alzheimer's

(UNIBAS, May 23, 2013)



Researchers from the University Hospital Basel and the University of Basel have modelled how certain protein deposits in the brain develop and spread in Alzheimer's disease and related forms of dementia. They have found surprising parallels to prion diseases. Alzheimer's disease is the most common form of dementia, affecting about 110,000 patients in Switzerland. It causes two main changes to brain tissue: plaque deposits outside neurons and neurofibrillary tangles, formed of abnormally folded tau protein, within the nerve cells. Research into "tauopathies", neurological disorders featuring abnormally folded tau, had been stymied by the lack of a suitable model, but progress has been made using a transgenic mouse model. The study results suggest that tauopathies might be transferable, however unlikely.
http://swissinnovation.org/news/web/2013/03-130523-2c.html

Critical Protein for Insulin Secretion Discovered

(UNIBE, May 28, 2013)

Scientists from the University of Berne have found an important protein for the secretion of insulin in the pancreas. The group, led by Dr. Daniel Fuster from the Institute for Biochemistry and Molecular Medicine has found that without the sodium/hydrogen exchanger NHA2 the secretion of insulin is greatly diminished. While it has been long known that such a protein could be relevant for the creation of insulin, this is the first time it has been identified. This discovery could lead to new approaches to treat diabetes.
http://swissinnovation.org/news/web/2013/03-130528-83.html

High-Tech Measurement of Elasticity of Biological Tissue

(CSEM, May 29, 2013)

In a recent CTI project, CSEM and CSM Instruments developed a new instrument that can measure the elasticity of biological tissue, the only instrument of its kind. It will help us to better understand illnesses such as arteriosclerosis, and how tumors begin. It will also serve to find new diagnostic methods, and to develop and optimize tissue scaffolds. The human body comprises many soft tissues - the Bioindenter tests and characterizes mechanical properties of almost every one. The Bioindenter analyzes cartilage, tendons, ligaments and muscle. It probes the cardiovascular system's tissues including the heart, capillaries, veins and arteries.
http://swissinnovation.org/news/web/2013/03-130529-57.html

Study on Chronic Illness Management and Adherence in Transplantation Study

(UNIBAS, May 30, 2013)

Non-adherence is recognized as a major public health problem leading to poor clinical outcomes and increased costs. Increasing evidence points at causation by factors at different levels of the healthcare system (healthcare provider, healthcare organization, practice patterns relative to chronic illness management, and healthcare policy). The BRIGHT study is a multi-continental,multi-center cross-sectional study led by the University of Basel’s Institute of Nursing Science. It will provide a comprehensive understanding of the association of healthcare system level factors and practice patterns and non-adherence. The BRIGHT study uses a survey design in 11 countries (Australia, Belgium, Brazil, Canada, France, Germany, Italy, Spain, Switzerland, UK, US) and 47 heart transplant cen-

ters across four continents. Data from heart transplant patients,transplant nurses/clinicians, and medical directors of programs will be collected and analyzed. Knowledge gained in this study will inform clinicians,researchers and healthcare policy makers at which level interventions have to be implemented.
http://swissinnovation.org/news/web/2013/03-130530-35.html

4. Nano / Micro Technology / Material Science

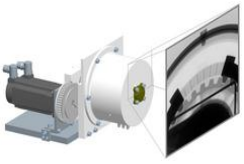
More Efficient Catalytic Converter

(Empa, April 01, 2013)

To help meet new emissions regulations, researchers at Empa (Swiss Laboratory for Materials Science & Technology) are improving the efficiency of catalytic converters by altering their internal structure. Current converts use a monolithic ceramic catalyst carrier that does not efficiently distribute exhaust gasses. The new development uses ceramic foam as the carrier, thereby creating internal turbulence to efficiently distribute gasses. The result is an improved efficiency with a smaller device. As a next step, researchers are optimizing the foam structure in order to increase gas throughput.
http://swissinnovation.org/news/web/2013/04-130401-18.html

Neutron Radiography Reveals Engine Oil Distribution

(PSI, April 03, 2013)



In a Motorcycle, knowing how much oil is needed and being used throughout its clutch assembly can be difficult to determine. However, engineers at the Schaeffler-Brand LuK (D) along with scientists from the Paul Scherrer Institute (PSI) in Switzerland have been working on illuminating metals with neutrons. The process of "neutron radiography" has yielded images of motorcycle clutch assemblies that can highlight, specifically, where and how much oil is reaching individual components within the clutch. In a motorcycle clutch, the "lamellae" are the stacks of discs that need to be lubricated to function properly and efficiently. Seeing "into" the clutch through "neutron radiography" provides information on what adjustments might be made to the clutch lubrication process in order to maximize performance efficiency.
http://swissinnovation.org/news/web/2013/04-130403-23.html

Empa Researchers Join Quantis to Form "Spin Out" Parlayed with Life Cycle Assessment Field

(Empa, April 04, 2013)

A new “Spin-out” from Empa will join the field of Life Cycle Assessment (LCA) at Quantis, a renowned international consultancy group. Empa’s research activities in the area of Life Cycle Assessments involves: energy, mobility, materials, buildings and databases management. LCA evaluates the stages of a product’s life cycle from raw material extraction, materials processing, manufacturing, distribution, recycling and disposal. LCA aids in providing solutions to reduce environmental impacts for companies, designers, and governments. The New Quantis branch will start its activities on 1 May 2013 at the Empa technology center glaTec in Dubendorf near Zurich. Serving the Swiss German and German markets, the collaboration with Empa will heighten Quantis as a global leader which will further exemplify companies that deploy sustainability through the life cycle approach.
http://swissinnovation.org/news/web/2013/04-130404-50.html

View Cooper Pair Formation in HT Superconductors

(EPFL, April 04, 2013)

High temperature superconductors (HTS) are revolutionary materials that can help advance energy management with low costs and energy efficiency. However, high temperature superconductors are difficult to attain since most conductors can only withstand withstand lower temperatures, around absolute zero (0°K or -273.15°C). In a recent PNAS article, Fabrizio Carbone’s Laboratory for Ultrafast Microscopy and Electron Scattering (LUMES) at EPFL, has developed a method that viewed the formation of "Cooper pairs" which are involved in the process of superconductivity. Scientists cooled HTS to superconducting temperature and then shot a laser pulse at the Cooper pairs which breaks the Cooper pairs back into single electrons. As the Cooper pairs broke and re-formed, they changed their color spectrum. Thus, in real time, researchers were able to view an actual Cooper pair formation. By observing this process in real time scientists hope to better understand how superconductivity works, especially at potentially higher temperatures.
http://swissinnovation.org/news/web/2013/04-130404-2f.html

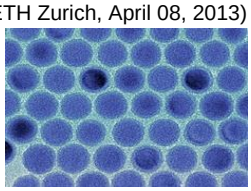
Solar Energy from Nanowires

(EPFL, April 08, 2013)

Nanowires are very small wires with diameters in the tens or hundreds of nanometers. Researchers at EPFL have created a nanowire that collects solar energy and converts it to electricity. At this early stage of development, the wires are already 10% more efficient than conventional solar panels, but could become much more efficient with more development. They also use 10,000 times less gallium arsenide, an expensive material that efficiently converts solar energy. This new technology enables the production of efficient solar nanowires at reasonable costs and in flexible shapes that can be integrated more easily into a variety of structures.
http://swissinnovation.org/news/web/2013/04-130408-21.html

Tin Nanocrystals for the Future Battery

(ETH Zurich, April 08, 2013)



Scientists headed by Maksym Kovalenko from the Laboratory of Inorganic Chemistry at ETH Zurich and Empa have now developed a nanomaterial which enables considerably more power to be stored in lithium ion batteries. The nanomaterial is composed of tiny tin crystals. “The more lithium ions the electrodes can absorb and release – the better they can breathe, as it were – the more energy can be stored in a battery,” explains Kovalenko. By influencing the time and temperature of the growth phase, the scientists were able to control the size of the crystals. “We are the first to produce such small tin crystals with such precision,” says the scientist.
http://swissinnovation.org/news/web/2013/04-130408-cd.html

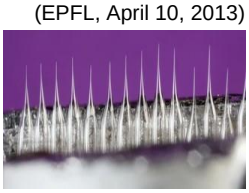
X-Ray Tomography Reveals Lithium Ion Battery Electrode Structure

(ETH Zurich, April 08, 2013)

While screening lithium ion battery electrodes through x-ray tomography, scientists have discovered micro-structure changes in high resolution which will help shed light on the charging process as well as efficient optimization of electrodes. Martin Ebner, a doctoral student from the group headed by Vanessa Wood, a professor at the Department of Information Technology and Electrical Engineering, has worked with the aid of synchrotron radiation which takes only 5 minutes to study a sample on the TOMCAT beamline compared to 5 hours on typical devices. With hundreds of gigabytes of data generated by the x-ray tomography screening, the electro-engineer was able to reconstruct the three-dimensional electrode structure showing the size, distribution, and configuration of the particles which has a major influence on the battery’s charging speed.
http://swissinnovation.org/news/web/2013/04-130408-5d.html

New Nano-Capillary Tube Manufacturing Technique

(EPFL, April 10, 2013)



Researchers at EPFL have discovered a new way to form nano-capillary tubes using an electron microscope. They start with a quartz tube and then run it under the microscope. As the tube accumulates electrons, it begins to deform. By varying the output of the microscope, the shrinkage is controlled from 200 nanometers to fully closed. The new tube was tested on a microfluidics chip designed to detect DNA, and it improved detection performance. It also costs less than current nano-channels being used. Other high-precision applications are envisioned as well.
http://swissinnovation.org/news/web/2013/04-130410-0e.html

Memory Effect Found in Lithium-Ion Batteries

(PSI, April 14, 2013)

Scientists at the Paul Scherrer Institute PSI, together with colleagues from the Toyota Research Laboratories in Japan have discovered a common type of lithium-ion battery has a memory effect, which happens when the voltage of the battery drops over time because of incomplete charging-discharging cycles. This discovery re-examines the use of lithium-ion batteries in the electric, hybrid vehicle market in which numerous cycles of charging and discharging adds up to a large memory effect. Therefore, the calculations on the value of voltage and current state of a charged battery are skewed. According to Petr Novak, Head of the Electrochemical Energy Storage Section at the PSI and co-author of the publication, the study disproves a long cherished misconception: "Ours is the first study that has specifically looked for a memory effect in lithium-ion batteries. It had simply been assumed that no such effect would arise."
http://swissinnovation.org/news/web/2013/04-130414-8b.html

Bio-Inspired Composite Materials

(ETH Zurich, April 16, 2013)

Material scientists from ETH Zurich have adopted a new method to produce composite materials by observing malleable plant component movements which produce synthetically materials with comparable properties. For instance, André Studart, a professor of complex materials at ETH Zurich's Department of Materials, and his team have simulated moving pine cone material in the lab by adding ultrafine aluminum oxide platelets as the rigid component to gelatin – the inflatable base material – and pouring it into square molds. The surface of the aluminum oxide platelets is pre-coated with iron oxide nanoparticles to make them magnetic. This enabled the researchers to align the platelets in the desired direction using a very weak rotating magnetic field. For future application purposes, Studart is looking into a possible use in medicine: using the new method, implants could be produced that only become effective in their definitive location in the body and would fit precisely.
http://swissinnovation.org/news/web/2013/04-130416-e9.html

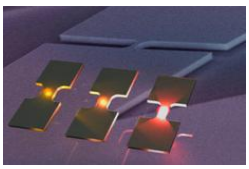
Joining Technologies and the Corrosion Lab

(Empa, April 19, 2013)

Since February 2012, Lars Jeurgens has been the new head of the "Technology and Corrosion Laboratory." which brought together the accumulated knowledge of two separate industry laboratories. Working with companies from the medical engineering area, Jeurgens and others are developing surface treatments for magnesium-based materials for use in biodegradable implants which resonate the keyword: "biocompatibility." By avoiding the changes in microstructure and advantageous mechanical or physical properties, Jeurgens and his team coat the heat-sensitive materials with a nanostructured metallic soldering material. With only a few laws known regarding nanomaterials, Jeurgens is entering the new field of nanorange while facing the challenge of soldering nanostructured materials being applied in technology.
http://swissinnovation.org/news/web/2013/04-130419-8d.html

Germanium-based Laser Communication

(ETH Zurich, April 22, 2013)



Researchers at ETH Zurich and the Paul Scherrer Institute have discovered a process for making germanium-based electronics suitable for laser light. Germanium normally has bad optical properties, but when it is strained just three percent, it is able to output 25 times more photons. The new process creates small, strained bridges in a strip of germanium through evaporation and scoring. The major benefit of germanium-based lasers is that it enables faster communication in very small electronics, which is needed to continue improving computer performance.
http://swissinnovation.org/news/web/2013/04-130422-15.html

Graphene Supercaps

(PSI, April 26, 2013)

Scientists at the Paul Scherrer Institute (PSI) have developed the basis for a graphene supercaps. With the help of this technology, the capacity of batteries in hybrid cars could be increased significantly. Because supercaps can be charged (and discharged) with an extremely high velocity, they can be used to store the energy generated by breaking with a hybrid car. The researchers from PSI, in collaboration with the ETH Zurich, have now created a graphene-based electrode which could be used in supercaps. The electrode has been engineered with partially reduced graphene oxide paper.
http://swissinnovation.org/news/web/2013/04-130426-e8.html

Innovation Award for Textile to Prevent Bedsores

(Empa, April 29, 2013)

Empa, along with Schoeller Medical AG and the Swiss Paraplegic Centre, has won the Innovation Award for New Applications at the International Trade Fair for Technical Textiles (Techtextil). The partners developed a special sheet to reduce pressure ulcers in bedridden patients. It provides a simple, inexpensive yet effective solution to a serious problem in nursing. Prolonged immobility reduces blood flow to the skin, causing skin damage from toxic substances and inadequate oxygen. The resultant ulcers are difficult to treat and may even

be life-threatening. Current prevention strategies are very expensive or ineffective. The new sheet has a skin-friendly, dot-matrix surface structure that reduces pressure, friction and skin moisture. The product will be launched soon, after laboratory tests and clinical trials.
http://swissinnovation.org/news/web/2013/04-130429-2f.html

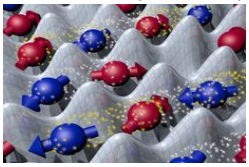
Computer Chip against Product Counterfeiting

(20min.ch, May 10, 2013)

Scientists at the University of Lugano are working with the Italian leather industry to develop a computer chip to help fight against imitation luxury goods. Their chip is embedded in the leather good and securely records information about its production. This chip can then be read at a later point to determine whether the product is real or an imitation. With small adaptations the chips will be applicable to textile products too.
http://swissinnovation.org/news/web/2013/04-130510-59.html

Quantum Simulator for Magnetic Materials

(ETH Zurich, May 24, 2013)



Physicists at ETH Zurich have developed a quantum simulator that allows arranging atoms in a way that they mimic the behaviour of electrons in magnetic materials. Physicists understand perfectly well why a fridge magnet sticks to certain metallic surfaces. But there are more exotic forms of magnetism whose properties remain unclear, despite decades of intense research. An important step towards filling these gaps comes now from Tilman Esslinger and his group at the Department of Physics. The team has developed a new kind of device that uses laser beams and atoms to emulate magnetic materials. Their approach promises fundamental insights beyond what can be obtained with current theoretical and computational methods. Moreover, the work might guide researchers towards finding new materials with interesting properties for future technologies and applications.
http://swissinnovation.org/news/web/2013/04-130524-d9.html

Simulating water transport through carbon nanotubes

(ETH Zurich, May 28, 2013)

There were high hopes of using carbon nanotubes, particularly for ultra-fast water transport to desalinate seawater. However, a simulation now reveals that these ultra-fast transport rates might have not been properly grounded after all. Researchers who work with experiments and computer models have been at odds over the capabilities and governing physics of the material ever since. A team of researchers headed by Professor Petros Koumoutsakos has now fuelled this scientific debate with the largest and most detailed simulation of water flow through carbon nanotubes to date. The computer model simulates CNTs of the same length as those used in experiments. Interestingly, the simulations have been able to confirm only a 200-fold enhancement of the water flow and do not confirm the 100,000-fold enhancement that had been claimed by some experimentalists.
http://swissinnovation.org/news/web/2013/04-130528-a7.html

5. Information & Communications Technology

CERN Celebrates Twenty Years of World Wide Web

(Cern, April 30, 2013)

Twenty years ago, the basic software needed to run a World Wide Web server and browser were made freely available by Tim Berners-Lee at the European Center for Nuclear Research (CERN). The web was originally created for physicists to share data, but has since transformed society in many ways. In celebration, CERN is restoring the first website and preserving historical information related to the development of the web.
http://swissinnovation.org/news/web/2013/05-130430-45.html

Green Light for .swiss Internet Domain Names

(OFCOM, April 30, 2013)

Switzerland is taking a new step in relation to managing the new top-level domain name .swiss. The Internet Corporation for Assigned Names and Numbers (ICANN), the corporation responsible for managing domain names worldwide, has deemed that the Swiss candidature meets the requirements. The first .swiss domain names could be registered by the autumn of 2014. Switzerland can therefore move on to the implementation phase, which will

include in particular the negotiation of the details of the contract with ICANN, preparation of the technical infrastructure and performance of the tests stipulated by ICANN. In parallel, OFCOM has to prepare the adaptation of the Swiss legal framework and define the conditions for assigning new addresses.
http://swissinnovation.org/news/web/2013/05-130430-0f.html

Net Neutrality in Switzerland

(UZH, May 03, 2013)

Net neutrality is the principle that all Internet traffic is handled the same way regardless of origin or purpose. This is currently a hot discussion topic because network providers would sometimes prefer to limit certain types of traffic. For example, mobile phone providers are facing competition from applications like Skype and WhatsApp that circumvent traditional telephone and SMS services. On the other hand, non-uniform handling of traffic can make networks operate more efficiently, for example giving priority to streaming video and audio data that requires low latency. University of Zurich professor Simon Schlauri is investigating these issues and the potential need for a net neutrality law in Switzerland.
http://swissinnovation.org/news/web/2013/05-130503-82.html

New Process for Crowdsourcing

(startupticker.ch, May 06, 2013)

yutongo is a Swiss startup that is developing a new process for crowdsourcing the ideation process. Their web application, for which they are searching for beta testers, allows project owners to submit a problem and then select a team of online, global innovators to find solutions to each of the sub-problems in the main problem. After many new ideas have been generated, a second step has the innovators recombine the sub-solutions into several final solutions. Innovators are paid for their effort and project owners get help with solving their problems.
http://swissinnovation.org/news/web/2013/05-130506-04.html

New Financing Round for Banking Startup

(startupticker.ch, May 17, 2013)

The Swiss banking startup Numbrs recently acquired a 7.5 million Swiss Franc round of funding. The company is developing a mobile app that allows users to consolidate all their banking information into one location. They can make transfers on the go, get notified when important transactions clear, and receive a projection of future cash flow and personal finances. The initial market for the app is Germany with future expansion into Switzerland and the UK, followed by expansions farther afield.
http://swissinnovation.org/news/web/2013/05-130517-7d.html

Highly Secure Mobile Solution for Finance Sector

(startupticker.ch, May 17, 2013)

Nomasis AG and the startup Sysmosoft SA, provider of secure IT solutions, plan to collaborate more closely in the future. Their strategic partnership aims to ensure mobility in the Swiss financial center and expand the supply of highly secure solutions for mobile IT. Nowadays the same phone is often used for both social and business purposes, so there is growing demand for security and control of data access by mobile devices, especially in the financial sector. To meet this need, Sysmosoft has launched a secure, customized IT solution for smartphones and tablets. Sysmosoft's SENSE software is complemented by Nomasis' expertise in consulting, integration and operational services, as well as its know-how in mobile device management and mobile security.
http://swissinnovation.org/news/web/2013/05-130517-85.html

Swiss-based Platform as a Service

(startupticker.ch, May 23, 2013)

The first Swiss-based Platform as a Service (PaaS) is being offered by the company innofield. PaaS allows users to run applications on a computing platform managed by another company, and computing capacity can be scaled as necessary for the current demand of the application. Costs are also scaled according to the resources used. The PaaS runs the Jelastic platform and guarantees Swiss data locality in either Basel or Zurich. By launching this service, innofield is answering a demand for Swiss-based PaaS, where quality of service and security are held in high regard.
http://swissinnovation.org/news/web/2013/05-130523-78.html

6. Energy / Environment

New Heat Flux Sensor

(greenTEG, April 01, 2013)

The gSKIN® Heat Flux Sensor measures conductive, convective and radiative heat fluxes in milliseconds with high accuracy. It allows to measure any thermal dynamics in your system. Due to its customizable design, it is a great choice for OEMs to integrate accurate thermal capabilities into their products. The ability to measure three different types of heat fluxes makes the Heat Flux Sensor an ideal tool in a wide variety of applications.
http://swissinnovation.org/news/web/2013/06-130401-70.html

Mining Gold in the Junkyard

(10vor10, April 04, 2013)

There are more than 400'000 new cars allowed onto the streets of Switzerland every year. 230'000 are retired annually, one half of those is resold and the rest is recycled. In Switzerland, this happens in a unique five-phase process. In a first step, all the fluids, such as batteries, petrol as well as the tires are removed from the car. Then the still intact parts of the car are removed in order to be resold as spare parts. The motor is removed in a next step. Finally, the autobody is shredded and the metal, such as the aluminium, is recycled. The remains from the shredding process consist mostly of plastic, which is burned to produce energy. Since the ashes still contain rare metals, they are filtered as well.
http://swissinnovation.org/news/web/2013/06-130404-3d.html

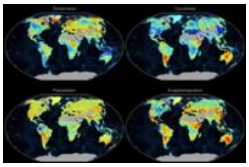
Golden Catalyst to Filter NO_2 Exhaust Gases

(PSI, April 12, 2013)

Exhaust gases produced by diesel combustion are freed from harmful nitrogen oxides with the aid of an aqueous urea solution. The urea decomposes into ammonia and this, in turn, reduces the nitrogen oxides into harmless nitrogen. Now researchers at the Paul Scherrer Institut (PSI) have developed a catalyst which can be used with better reducing agents than urea for nitrogen oxide reduction. The new catalyst based on gold nanoparticles on a substrate of titanium dioxide (TiO_2) enabled the use of guanidinium formate salt (GuFo) instead of urea. This salt is characterized by a number of advantages, namely it is very soluble in water and can store more ammonia per liter of solution than urea.
http://swissinnovation.org/news/web/2013/06-130412-42.html

Geographers Identify Causes of 80% of Vegetation Change

(UZH, April 16, 2013)



Over the past 30 years, vegetation worldwide has changed considerably, but nobody knew until now to what extent the climate or Man were responsible. Now geographers at the University of Zurich and their Dutch colleagues have developed a model that can represent the influences of man and climate on vegetation separately. The model integrated satellite data from the last 30 years showing increases or decreases in vegetation, climate measurements and models, as well as data on land cover type. It revealed that about 54% of vegetation changes are climate-related, while over 30% are caused by human or unspecified human-climate interactions like deforestation, conversion of forest to plantations or general changes in agriculture. About 10% cannot be explained by either factor.
http://swissinnovation.org/news/web/2013/06-130416-d3.html

High-Efficiency Solar Collector for Electricity and Desalination

(ETH Zurich, April 22, 2013)

A team of Swiss researchers created a highly-efficient device to collect solar energy and convert it to electrical and thermal energy. A parabolic collector focuses sunlight on a triple-junction photovoltaic cell that is cooled using microchannel Aquasar technology. This technology circulates water to within micrometers of the electronics and carries away heat efficiently. Thirty percent of the collected energy is converted to electricity, while another fifty percent is captured in the cooling water, which can be used for desalination. The researchers hope that their new device will provide clean electricity and water around the world.
http://swissinnovation.org/news/web/2013/06-130422-25.html

2000 Years of Climate Change between Continents

(UNIBE, April 24, 2013)

Past climate change varied remarkably between regions. This is demonstrated in a new study coordinated by the international Past Global Changes (PAGES) project, which reconstructed temperature over the past 1000 to 2000 years. It is the first comprehensive temperature reconstruction on a continental scale. One of its main findings is that a general cooling trend, caused by different factors (e.g. orbital-driven insolation and changes in solar and volcanic activity), was ubiquitous across all continental-scale regions and was reversed by a distinct warm trend beginning at the end of the 19th century.
http://swissinnovation.org/news/web/2013/06-130424-31.html

Balancing Hydropower Capacity and Environment

(EPFL, April 29, 2013)

As Switzerland plans to shift more towards hydroelectric electricity generation, the balance between economic and ecologic use of water resources becomes a more important question. Riverine ecological systems rely on flow variability to remain healthy. Thus, researchers at EPFL have developed a process, using marginal analysis, for fairly allocating water to economic and ecologic needs while preserving flow variability. Solving this allocation problem now is important because restoring a riverine environment after the fact is much more difficult than acting proactively.
http://swissinnovation.org/news/web/2013/06-130429-aa.html

Swiss Water Supplies Assured Until 2099

(swissinfo.ch, May 01, 2013)

Computer simulations carried out by the Swiss Federal Institute for Forest, Snow, and Landscape Research found that through the year 2099, Switzerland will have adequate water supplies for drinking and hydroelectric energy production provided certain improvements in infrastructure are initiated. Due to climate change, glaciers are dwindling, but if the size of reservoirs are increased as well as pump and turbine capacities improved, then Switzerland will be able to meet its water demands while also being a supplier of hydroelectric energy for other countries in Europe. Hydroelectric power is anticipated to phase out nuclear energy by the year 2050. The ETH Board announced the Federal Institutes of Technology will be given an additional $64 million over the next four years for new research teams and investments in infrastructure.
http://swissinnovation.org/news/web/2013/06-130501-e3.html

Decreasing Car Usage in Swiss Cities

(EPFL, May 01, 2013)

A study carried out by EPFL and UNIGE and conducted in Lausanne, Geneva, Bern and Yverdon-les-Bains reports the way active urban groups have greatly diversified their modes of travel over the past two decades. The city of Berne constitutes a model in terms of public transport and sustainable mobility. The study by the Urban Sociology Laboratory at EPFL and the University Mobility Observatory at UNIGE compared data from 1994 and 2011 showing that Lausanne and Geneva's active urban groups are no longer reliant on a single mode of transport as they now combine their transportation modes according to their purposes. As a result, car usage has decreased in favor of public transportation, two wheels or even two feet.
http://swissinnovation.org/news/web/2013/06-130501-38.html

Improved Radiocarbon Dating

(UNIBE, May 03, 2013)

Radiocarbon dating is an important method in many fields, including climate research. One of the primary tools used for radiocarbon dating was invented over fifty years ago in Bern by Hans Oeschger. Now, the University of Bern recently acquired a much improved instrument that uses accelerator mass spectrometry. It is able to date much smaller samples in the range of milligrams and micrograms. This improves the laboratory's ability to collaborate on a range of projects from climate research to development of new medicines.
http://swissinnovation.org/news/web/2013/06-130503-e6.html

Solar Impulse Flying across the United States

(swissinfo.ch, May 06, 2013)

The 2013 Across America flights kicked off on May 3. It has a five-stop itinerary: from San Francisco (California) to Phoenix (Arizona), to Dallas (Texas) to Saint Louis (Missouri) or Atlanta (Georgia), ending in Washington D.C. and New York City. While the Solar Impulse team has begun a series of landmark test flights across the United States, work is under way in Switzerland on cutting-edge materials for the next version of the solar-powered aircraft. The goal of the creators of Solar Impulse is not just to set records but to promote the implementation of renewable energy technologies. With some 80 partners, including many Swiss companies, who have helped conceive, build, test and fly the prototype, the wealth of research generated by the project has stretched far beyond this initial aspiration.
http://swissinnovation.org/news/web/2013/06-130506-94.html

CHF 10 million Donation for Geothermal Energy Research

(ETH Zurich, May 07, 2013)

The Werner Siemens Foundation donation for geothermal energy research will fortify the federal government's energy strategy and play a viable role in Switzerland's future energy source. Households in Switzerland do not generate electricity from geothermal, but many cantons and businesses find this type of energy to have major potential, due to its renewability. Deploying geothermal energy in district heating is a challenge, however, with efficient drilling and artificial fissuring on the bedrock, these technical problems can be addressed. In 2011, more than 2,500 gigawatts hours were extracted in Switzerland and experts hypothesize a dozen geothermal sites by 2030 will be built. These sites would produce over 800 GWh of electricity per year.
http://swissinnovation.org/news/web/2013/06-130507-16.html

Greenland Ice Streams Raise the Sea Level by 4-8 cm

(UZH, May 08, 2013)

The Greenland Ice Sheet mainly drains via ice streams, fast-flowing glacier ice, through narrow, deep fjords directly into the sea. There it calves, forming icebergs. Greenland's ice is shrinking annually. However, it was previously unclear just how much this melting causes sea levels to rise. With the support of geographers from the University of Zurich, European researchers have calculated the future mass loss from Greenland's ice streams. They simulated the complex behavior of Greenland's four largest glaciers, which account for a fifth of the ice flow, and used their bespoke computer model to estimate future annual losses of 30-50 gigatons of ice (50 km3). By 2100, the sea level will increase by 4-8 cm, lower than previous estimates had suggested.
http://swissinnovation.org/news/web/2013/06-130508-ee.html

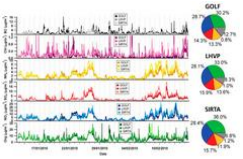
Swiss Cleantech Finalists in ACES Award 2013

(startupticker.ch, May 10, 2013)

ACES are the only pan-European awards for enterprise in university and public research institutes that recognize researchers, engineers, professors, students and government officials in Europe who have cultivated an enterprise on campus. Two out of the eight finalists hail from Switzerland, representing Kandou Bus and Osmoblue. Kandou Bus is a semiconductor company offering a unique approach to serial link design which increases high-speed bit-rate links while reducing power consumption giving more energy-efficiency. OsmoBlue provides a sustainable and profitable solution to industries to recycle their waste heat. Their patented technology converts low-temperature heat, as low as 30°C, into electricity and can be applied in various types of industries such as data centers, incinerators, chemical plants, oil refineries, etc. Both companies are judged by the Science|Business Innovation Board, a leadership panel co-founded by Science|Business, business schools INSEAD and ESADE, in association with Microsoft and BP.
http://swissinnovation.org/news/web/2013/06-130510-30.html

Parisian Air Quality is better than Expected

(PSI, May 10, 2013)



The public often perceives megacities as major sources of air pollution, having detrimental effects on their surroundings. However, recent studies show their environmental credentials are better than expected. An international team of researchers, including from the Paul Scherrer Institute (PSI), has confirmed, from aerosol measurements taken over one month in Paris, that air quality in the suburbs is less affected than anticipated. Air quality in the city

centre and the outskirts is dominated by supraregional factors, particularly aerosols from Central Europe. Vehicles remain the dominant source of soot, a major aerosol component. Burning fossil fuels produces 75-80% of the total Parisian soot mass; burning wood produces the remainder. Climate researchers are particularly concerned about effects of two-wheelers on air quality.
http://swissinnovation.org/news/web/2013/06-130510-82.html

Implementing the Law of Osmosis into Electrical Heat Generation

(EPFL, May 11, 2013)

The start-up, Osmoblue, based in EPFL's Laboratory of Microsystems, has built a machine based on the law of osmosis which converts heat over 30 degrees into electricity. This machine can be implemented with any heat source such as air, water, gas, etc. Efficiency is maintained by being connected to both the heat source and the power grid. Osmoblue has demonstrated the machine as a digital model for evaluating the performance of the product: for example, validating an estimate of 10 megawatts of heat could produce between 100 and 600 kilowatts of electricity, equivalent to the consumption of one hundred homes. A first prototype is currently being manufactured at EPFL. A pilot unit on a larger scale could then be installed in a regional waste incineration company in 2014.
http://swissinnovation.org/news/web/2013/06-130511-99.html

Big Bang Tourist Trail Celebrates CERN's Contributions

(CERN, May 13, 2013)

On 2 June 2013 CERN, the European Organization for Nuclear Research, in collaboration with its local partners, will inaugurate a scientific tourist bike trail ride through the Pays de Gex and the Canton of Geneva. The trail will go through the local countryside, with 10 exhibition platforms located at 10 different CERN sites and is referred to as the passport to the Big Bang. The course will follow the underground ring of the LHC particle accelerator. Visitors will have the opportunity to watch short video of sequences illustrating different aspects of CERN's science and technology as well as play an online game called the "LHC Mission" which uses the interactive terminals located at each platform
http://swissinnovation.org/news/web/2013/06-130513-84.html

Melting Mountain Glaciers Cause Sea Levels to Rise

(UZH, May 16, 2013)

Nearly 99% of the Earth's land ice is stored in the vast ice sheets of Antarctica and Greenland, compared with only about 1% in glaciers. Nevertheless, new mass measurements have shown that from 2003-2009 glacier melt water contributed similar amounts to the sea level rise as the two ice sheets: namely a third. This finding from an international study, involving 16 scientists from nine countries including University of Zurich geographers, is published in Science. Previous estimates of the glaciers' contribution diverged considerably. Data from traditional ground measurements have now been compared with satellite data from NASA missions ICESat (Ice, Cloud and land Elevation Satellite) and GRACE (Gravity Recovery and Climate Experiment) to obtain far more accurate ice loss measurements worldwide.
http://swissinnovation.org/news/web/2013/06-130516-f5.html

Drought Triggers Mass Flowering in Borneo

(UZH, May 21, 2013)

Tropical plants bloom at irregular intervals and mass blooming is typical. This phenomenon is puzzling, because temperatures and day length near the equator are relatively constant throughout the year. It was previously assumed that several weeks of drought could trigger mass flowering in Borneo's forests, but empirical data and genetic analyzes were lacking. Using next generation sequencing methods, evolutionary biologists at the University of Zurich have now identified two genes that trigger the flowering of a tropical deciduous tree, Shorea beccariana. After drought, expression of the two genes SBFT and SbSVP changes just before flowering. By monitoring these genes, predictions of mass flowering can be improved, enabling plant seeds to be collected in a coordinated manner and used for reforestation.
http://swissinnovation.org/news/web/2013/06-130521-47.html

Eco-Friendly Districts in Smart-City

(CSEM, May 21, 2013)

By taking their environment into consideration, smart buildings can perform significant energy savings, translated directly into CO^2 reduction. The €6.5 million European project AMBASSADOR will transform smart buildings into flexible buildings in an eco-district. Three Swiss companies have joined a consortium of 15 industrial and academic partners with complementary back-ground know-how, and will team up to offer unique reference designs for eco-friendly district(s) in a smart city.
http://swissinnovation.org/news/web/2013/06-130521-97.html

Report on Toxic Nanoparticles Emissions during Waste Incineration

(PSI, May 23, 2013)

In collaboration with the Paul Scherrer Institute (PSI), a research team reported on the fate of nanoparticles emitted during the waste incineration process. A new prototype instrument that analyzes these nanoparticles has been built and will analyze emission particles from the combustion process on the basis of chemical composition and particle size. Further, this measuring device should adjust the operational parameters of a combustion system and monitor the effect it has on nanoparticle emissions directly. Ultimately, PSI-scientists hope to combine these two as yet separate operations (the determination of size distribution and chemical composition) into one device. The long-term goal is to build a mobile instrument where measurements can be performed on site at waste processing plants. This report was published in the scientific journal Nature Nanotechnology.
http://swissinnovation.org/news/web/2013/06-130523-e7.html

Sustainability Targets are challenging but Reachable

(Empa, May 23, 2013)

Environmental awareness is growing steadily, technology is increasingly efficient, and sustainable lifestyles appear feasible. Yet the sustainability target, set 15 years ago, of each inhabitant on Earth consuming only 2000 watts (the global average) has still not been reached. A study by Empa and the Federal Institute of Technology (ETH) Zurich shows that per capita energy consumption in Switzerland exceeds the sustainability target significantly; among the 3369 households surveyed, it ranged from 1400-20,000 watts (average 4200 watts). Researchers consider living and transport behavior as having most potential for improvement. Political measures combined with individual frugality can help achieve sustainability, e.g. intelligent town planning, reduced travel, environmental education, living in smaller heated areas, and avoiding excessive consumption of goods and services.
http://swissinnovation.org/news/web/2013/06-130523-ae.html

CHF 2.5 Million Donation for ETH Zurich Energy Projects

(ETH Zurich, May 29, 2013)

Alstom AG, Switzerland, ETH Zurich and the ETH Zurich Foundation have agreed to collaborate to promote fundamental research in the field of energy and sustainability. Alstom has pledged a donation of 2.5 million Swiss francs to support projects that aim to develop novel technologies for the use of alternative energy sources or more efficient energy conversion. The funds provided are available to all professors at ETH Zurich, and any project ideas submitted will be examined by a scientific commission.
http://swissinnovation.org/news/web/2013/06-130529-9d.html

7. Engineering / Robotics / Space

Measurement of Anti-Matter Excess in Space

(CERN, April 03, 2013)

Professor Samuel Ting, spokesperson for the Alpha Magnetic Spectrometer (AMS) experiment onboard the International Space Station presented preliminary results at a seminar at CERN. The objective of AMS is to search for dark matter and help answer questions about the origins of the universe. One theory regarding the origin of positrons is that they result from annihilation of dark matter. AMS has detected over 25 billion events so far, including over 400,000 positron events, and the AMS data is consistent with this theory about the origin of positrons. More data will continue to be gathered in order to attempt to rule out other explanations for the positrons.
http://swissinnovation.org/news/web/2013/07-130403-b4.html

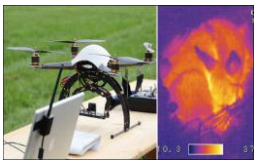
Start-Up to Launch Swiss Shuttle in 2018

(Newscientist, April 01, 2013)

The mini space orbiter Soar aims to transport small satellites into the Earth's orbit in five years' time. The European Space Agency (ESA) is supporting this project developed by Swiss Space Systems (S3). Founded by former Swiss test pilot Pascal Jaussi, partnering with French aircraft manufacturer Dassault, this private startup will build a reusable transporter to carry satellites to an altitude of 600-800 km. ESA will also advise on developing the S3 shuttle. An Airbus A300 will transport the unmanned drone up to an altitude of 10 km. From there it will advance under its own power. Each flight will carry a 250 kg load, at an estimated cost of EUR 10 million – costing a quarter of ESA's Vega rocket.
http://swissinnovation.org/news/web/2013/07-130401-53.html

Flying Quadrotors to Save Fawns from Mowing-Machine

(20min.ch, April 18, 2013)



Every year, more than 3000 fawns are killed by mowers in Switzerland. Researchers from the University of Applied Sciences in Berne (UAS Berne) have developed a flying robot to save these animals. They use a flying quadrotor equipped with a thermal camera to find the animals. Once detected, the animals can be taken away before the mower passes through the field. In an experiment with 100 fields, 21 fawns, 10 deer and one young rabbit could be detected and saved with the robot. On average, the automated robot needs 7.5 minutes to check an area of one hectare.
http://swissinnovation.org/news/web/2013/07-130418-b7.html

Record Breaking Robotics Festival

(EPFL, April 20, 2013)

The recent Robotics Festival co-organized by EPFL and NCCR Robotics has surpassed many records including over 17000 attendees as well as over 450 volunteers. This year's theme of "outer space" held exhibitions on space exploration robots, robotic telescopes, and a section on science fiction. The festival had fifty booths, thirty workshops, and two robotic competitions. This year's guest of honor was Swiss Astronaut, Claude Nicollier. His three conference appearances were fully attended. In addition to the conjunction with EPFL, other universities, vocational schools, associations and startups, business dynamics and overviews on Robotics were presented.
http://swissinnovation.org/news/web/2013/07-130420-02.html

Solving the Space Junk Problem

(20min.ch, April 22, 2013)

Space junk, or junk that orbits Earth and poses a danger to satellites is becoming an increasing problem. Space junk arises from rocket launches, failed satellites, and any other material disposed in orbit. Because it travels at very high speed, a collision with a satellite or space station can cause severe damage and more space junk. The Swiss Space Center and EPFL are proposing a solution, named CleanSpace One, that uses small satellites to attach to space junk and drag it to a decaying orbit, where the junk will soon burn up in the atmosphere. An initial demonstration would dispose of previously-launched Swiss satellites.
http://swissinnovation.org/news/web/2013/07-130422-d0.html

Globular Clusters Indicate How Stars are formed

(UNIGE, April 11, 2013)

Globular clusters, typically consisting of hundreds of thousands of stars, are among the universe's oldest objects and probably formed at the same time as their host galaxies, like the Milky Way. They were believed to comprise a single generation of stars with a homogeneous chemical composition. However, recent observations made using the ESO's Very Large Telescope and the Hubble Space Telescope have revealed multiple stellar generations with very different chemical compositions, particularly with large sodium and oxygen anomalies. Researchers from the University of Geneva, the National Centre for Scientific Research (CNRS) and the Max-Planck-Institute are modelling interactions between ejecta of massive stars and interstellar matter to better understand the mystery of induced star formation, as reported in Astronomy & Astrophysics.
http://swissinnovation.org/news/web/2013/07-130411-01.html

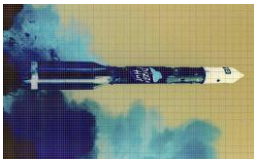
New Microrobot Capable of Measuring the Eye's Oxygen Supply

(ETH Zurich, May 06, 2013)

Retinal vein occlusion from glaucoma is only one of several diseases that can decrease the oxygen supply to the retina: Like every tissue of our body the retina needs oxygen. An insufficient supply can cause blindness, sometimes within mere hours. In order to make a fast and correct diagnosis, physicians need to be able to assess oxygen levels within the eye. However, the currently available tools are not very sensitive. Researchers of the multi-scale robotics lab at ETH Zurich have now developed a microrobot that can measure the retina's oxygen supply.
http://swissinnovation.org/news/web/2013/07-130506-3d.html

Swiss Company aims to Offer Satellite Launches

(swissinfo.ch, May 08, 2013)



Switzerland is aiming to join an exclusive club, and sharing a market expected to be worth $50 billion in 2020. The Swiss company S3 recently revealed its ambitious goal of launching satellites from a reusable shuttle. S3 does not plan to go head-to-head with the biggest players in the launch market. It wants to restrict itself to satellites weighing 250 kilograms or less used in low-Earth orbit, at an altitude of 700 kilometres. The competition is not far off though and promises to be fierce. In 2002, Elon Musk, one of the founders of PayPal and Tesla, set up SpaceX, promising to slash the cost per ton of a launch by 20 per cent. After three successive failures, his Falcon rocket got its first satellite into orbit in 2009.
http://swissinnovation.org/news/web/2013/07-130508-44.html

Ultralight Motorized Aircrafts to Analyze Lake Geneva's Water and Air Currents

(20min.ch, May 10, 2013)

In stage two of the Elemo scientific program, two ultralight motorized aircraft (ULMs) will fly over Lake Geneva for three weeks to analyze its waters. Elemo 1, conducted in 2011 by Russian MIR submarines, analyzed pollution and micro-organisms in the water. The ULMs, using sensors and state-of-the-art technologies, will undertake photographic surveys to study phenomena in water's upper layer (<1m depth) and examine the influence of air currents. The operation is coordinated by the Honorary Consulate of Russia with the Russian Geographical Society. Elemo 2's partners include the EPFL, the pharmaceutical company Ferring and several Russian scientific institutions. The ULM will then fly over Germany, Poland, the Baltic States and Russia to Lake Baikal, further investigating and comparing lacustrine environments.
http://swissinnovation.org/news/web/2013/07-130510-45.html

New Swiss Business Jet

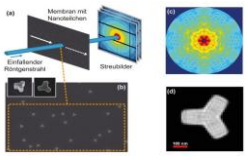
(20min.ch, May 21, 2013)

Pilatus Aircraft unveiled at the European Business Aviation Convention & Exhibition their newest aircraft, a light, versatile jet that is the first jet aircraft from Switzerland in more than fifty years. The new PC-24 aircraft builds on the successful PC-12 and will be able to fly out of short, unimproved runways. It is also the first business jet fitted with a cargo door, a popular feature on the PC-12. The first test aircraft will fly in 2014 with initial deliveries in 2017.
http://swissinnovation.org/news/web/2013/07-130521-07.html

8. Physics / Chemistry / Math

Nanostructure Reconstruction from XFEL Light Scattering

(PSI, April 08, 2013)



Scientists at the Paul Scherrer Institute have developed a method to determine the structure of a nanoparticle using an x-ray free electron laser (XFEL). In the experimental part, several nanoparticles of the same type are arranged on a membrane and then illuminated with short pulses from the XFEL. The scattering of the light is measured, and then this data is processed to determine the structure. The processing calculates the cross-correlation of the data, and is especially clever because the number of particles in each pulse of light does not need to be known. This new process will have a wide-ranging applicability to nanoparticle and biomolecule development.
http://swissinnovation.org/news/web/2013/08-130408-18.html

Large Hadron Collider Insulation Improvements

(Cern, April 09, 2013)

During the ongoing planned shutdown of the Large Hadron Collider (LHC) at CERN, the insulation of the interconnections between the 1695 magnets is being improved through consolidation. The insulation allows the magnets and the cables supplying their power to operate as superconductors at a temperature of 1.9 Kelvin. Several layers of insulation are used, and the pressure is dropped to 1e-6 millibars. These and other improvements will enable the LHC to operate at even higher powers when it comes back online.
http://swissinnovation.org/news/web/2013/08-130409-45.html

Large Hadron Collider Leveling and Realigning

(Cern, April 09, 2013)

As part of the planned shutdown of the Large Hadron Collider (LHC) at CERN, a team is taking measurements of the vertical position and alignment of the magnets. The measurements are made on every second magnet and while the system is still cold in order to minimize measurement errors from environmental and mechanical effects. Once the data have been collected, they will be compared against baseline data from 2008 and 2009 to gain an accurate understanding of geological shifts affecting the LHC. Before the LHC restarts, the magnets will be realigned to sub-millimeter precisions.
http://swissinnovation.org/news/web/2013/08-130409-8a.html

Control of Atomic Quantum State

(ETH Zurich, April 18, 2013)

Researchers at ETH Zurich who work with electronic circuits that act like artificial atoms were able to demonstrate accurate control of the quantum state of these atoms using microwave pulses. The artificial atoms are able to hold their quantum state longer than natural atoms, making them usable in quantum computers. Being able to control them is also an important technology advancement for quantum computers, and helps make the quantum state more robust.
http://swissinnovation.org/news/web/2013/08-130418-67.html

Explanation for Matter-Antimatter Asymmetry

(CERN, April 24, 2013)

The LHCb experiment at CERN is providing data to help explain the matter-antimatter asymmetry in the universe. Both are suspected to have existed in equal quantities at the beginning of the universe, but now matter is more prevalent. The experiment shows, to high confidence, that certain particles prefer to decay into matter rather than antimatter. Such preference was shown earlier for other particles, but this new information may be indicative of new physics going beyond the Standard Model's explanation of CP violation.
http://swissinnovation.org/news/web/2013/08-130424-3a.html

SwissFEL Construction Launched

(PSI, April 25, 2013)

In the forest of Würenlingen, the construction works for the SwissFEL have begun. During the next 18 months, the new large-scale device of the Paul Scherrer Institute (PSI) will be built. Since the beginning of April, the preparations for the construction have been underway. With the excaviation work completed, the concreting for the 740 meter long and up to 50 meter wide building has begun. The construction is scheduled to be finished by the end of 2014, and the SwissFEL will be operational by the end of 2016.
http://swissinnovation.org/news/web/2013/08-130425-8f.html

Effects of Gravity on Antimatter

(CERN, April 30, 2013)

Scientists running the ALPHA experiment at CERN have begun running experiments to test the effect of gravity on antimatter, the first experiment of its kind. Theory predicts that gravity has the same effect on both matter and antimatter. To test this, antihydrogen atoms are trapped and then intentionally released. Determining the exact results is difficult because the antihydrogen is also subject to thermal as well as gravity effects. So far, bounds on anomalous gravity effects have been put in place, but once the experiment comes back online in 2014, more accurate tests will be performed.
http://swissinnovation.org/news/web/2013/08-130430-6e.html

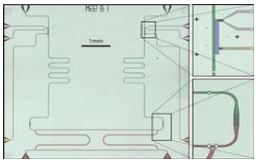
Magnetic Observation System with Nano-Rods

(PSI, May 05, 2013)

Scientists at the Paul Scherrer Institute PSI in Switzerland have developed a new magnetic nano-system giving the first observation of magnetization directional interaction among atoms and molecule vibrations. In the special model system, six nanoscopic magnetic rods contain a north and south pole which attract each other, and, at room temperature scientists were able to observe the magnetic interactions between the active rods. Consequently, scientists noted that at a thickness of three nanometers they were able to make accurate observations in real time. With this system, scientists anticipate further investigations into fundamental phenomena like phase transitions, geometrical frustration and the physics of glassy materials. Technological applications for data storage, transferring magnetic rather than electrical charge, might also be possible.
http://swissinnovation.org/news/web/2013/08-130505-ff.html

Quantum Optics with Microwaves

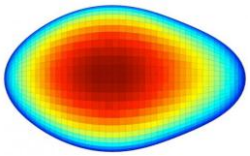
(ETH Zurich, May 08, 2013)



Physicists at ETH Zurich have demonstrated one of the quintessential effects of quantum optics – known as the Hong-Ou-Mandel effect – with microwaves, whose frequency is 100'000 times lower than that of visible light. The experiment takes quantum optics into a new frequency regime. Moreover, the lower frequency of the microwave photons enabled a more complete characterization of the effect than has been able so far with optical photons, opening up new possibilities to characterize radiation sources. Finally, the new experiment highlights how quantum optical effects can be exploited in experiments with microwave sources, which may lead to practical applications of "microwave optics".
http://swissinnovation.org/news/web/2013/08-130508-e7.html

Asymmetric Nucleus Shapes Measured

(CERN, May 08, 2013)



While most atomic nuclei assume a symmetric shape, some advanced theories predict asymmetric shapes for certain atoms. Scientists at CERN were able to measure, for the first time, a pear-shaped nucleus in radium using the ISOLDE radioactive-beam facility. They also measured the shape of the radon nucleus, which vibrates about a pear shape. This measurement will not only help improve our understanding of the physics of atomic nuclei, but also help in the search for atomic electric dipole moments.
http://swissinnovation.org/news/web/2013/08-130508-55.html

Ionization Potential of Astatine Measured

(CERN, May 14, 2013)

Researchers at CERN have measured the ionization potential of astatine, the last naturally occurring element for which this value was unknown. They used the ISOLDE radioactive-beam facility and wavelength-tuned lasers to artificially create astatine, and then remove an electron to ionize it. Measuring the ionization potential serves two important purposes. It will allow chemists to determine the suitability of the element for use in radiopharmaceuticals for cancer treatment, and it will serve as a baseline for verifying theories about the atomic structure of super-heavy elements.
http://swissinnovation.org/news/web/2013/08-130514-fc.html

Muon Spectroscopy Experiments

(PSI, May 17, 2013)

The Paul Scherrer Institute plays a unique role in the progress of materials science through its research with muons. Muons are highly unstable, electrically charged particles, used as research tools, and also subjects of research themselves. PSI is the only source for Low Energy Muons (LEM), which are used to study thin-film structures, essential in many electronic devices. Muon spectroscopy experiments at PSI are exploring the phenomenon of high-temperature superconductivity. PSI's muons, together with a specially developed laser, are the tools that enabled, recently, a precise measurement of the proton's radius. PSI's mastery of muons may even lead to changes in fundamental theories of particle physics, by enabling scientists to test their theories against measurable phenomena.
http://swissinnovation.org/news/web/2013/08-130517-ab.html

9. Architecture / Design

Robotic Systems for Accurately, Efficiently Building Skyscrapers

(ETH Zurich, April 10, 2013)

ETH Zurich researchers at Singapore's Future Cities Laboratory are investigating how urban development can best accommodate rapid population growth in Asia's cities. A team examined robotic systems that build skyscrapers highly accurately and efficiently, potentially laying the foundations for sustainable development. Singapore, considered the Asian Switzerland, is clean, safe and stable, but its population density (>7,200 people per km^2) is 35 times higher than Switzerland's and 80% of its population lives in high-rise buildings. Interest in the ETH Research is due to Switzerland's quality label and reputation for high quality of life, associated with innovation, precision and reliability. The construction industry needs more automation, particularly robots that are highly accurate, affordable and universally applicable like those from the ETH Lab.
http://swissinnovation.org/news/web/2013/09-130410-d0.html

Smart Living Lab Showcases Future Energy-Efficient Buildings

(EPFL, April 24, 2013)

On April 23rd, the President of the Council of State of Fribourg, Anne-Claude Demierre, and Patrick Aebischer, President of EPFL signed a contract to begin the construction of a Smart Living Lab (SLL) in partnership with the Canton of Fribourg. The center will exemplify technologically advanced and energy-efficient buildings of the future. Within the BlueFACTORY Technology Park, the SLL will play a key role in the development of a "zero carbon" building. The SLL will promote research projects with third-party institutions such as the Swiss Federal Laboratory for Materials Science and Technology (EMPA) regarding the disciplines of design and habitat use. The Canton of Fribourg will finance the infrastructure, installation and operations of the University and EIA-FR's research groups. The BlueFACTORY Park represents a partnership between the state and the city of Fribourg and currently inhabits twenty local start-ups working on sustainable development. Construction for the 60,000 m^2 blueFACTORY Technology Park will begin next year.
http://swissinnovation.org/news/web/2013/09-130424-00.html

Holographic Showcase Brought Manuscripts to Life

(EPFL, April 26, 2013)

For the first time, EPFL has presented a holographic showcase during the exhibition, "Le lecteur à l'oeuvre" (the reader at work) taking place at the Martin Bodmer foundation. The showcase brings old manuscripts to life through an interactive dimensional reader experience. The Digital Humanities Laboratory has also developed a software application that can automatically generate a documentary film based on a selection of page reproductions. It's able to create a video sequence, automatically divided into chapters, in which the user can navigate in an intuitive manner, and read by a synthetic voice. The audience visiting the exhibition in Cologny will be the first to try these new documentaries aided by tablets to accompany their experience.
http://swissinnovation.org/news/web/2013/09-130426-6a.html

10. Economy, Social Sciences & Humanities

Dalai Lama Urges Dialogue on Science and Spirituality

(UNIL, April 12, 2013)

The 14th Dalai Lama, Tenzin Gyatso, met scientists from the University of Lausanne to discuss growing old and dying in peace. He sent a message of compassion and openness to others, emphasizing the importance of secular ethics education from an early age, and expressing his skepticism of rituals. His direct audience comprised 1,200 people, with many others following the discussions via live coverage, i.a. over the internet. The debate broke scientific barriers, ranging from psychology to anthropology, through medicine, sociology, history and neuropsychology. The Dalai Lama reminded his listeners to acquire new knowledge throughout life and keep their minds sharp. He believes money and technology cannot solve all problems, and more debates like this, combining science and spirituality, are needed.
http://swissinnovation.org/news/web/2013/10-130412-63.html

Interactive eAtlas is Online

(UNIL, April 30, 2013)

Resulting from a joint UNIL and EPFL project initiated by Micheline Cosinschi in 2008, the eAtlas of Valais was funded by several departments of the Canton of Valais from 2010-2012. Recently published online, it comes in two forms: as textual content and static images presented in web pages and links to eAtlas maps; as interactive atlases, one socio-economic and the other environmental, that enable users to read maps or create their own at different geographical scales. Hundreds of indicators are available. The text pages of the eAtlas of Valais cover: territorial divisions; geographical indicators; articles referring to multiple indicators to help users understand the historical processes and spatial challenges of Valais society. The socio-economic atlas is the main cartographic volume.
http://swissinnovation.org/news/web/2013/10-130430-94.html

Multitasking May Improve Performance

(UNIBAS, May 13, 2013)

University of Basel researchers have found that multitasking does not necessarily inhibit performance. Various studies have shown that, in many tasks, multitasking reduces performance. Interrupting nurses while they are treating patients, for example, increases the likelihood of an incorrect drug dosage. However, this is not always so. Distracted golfers may actually play better. As reported in Psychological Science, cognitive load per se does not cause poorer judgment. However, the choice of judgment strategy determines how cognitive load affects performance. If a task is best solved by a simple, similarity-based strategy, whereby judgments are based on past experience, multitasking may even improve performance. A better understanding of cognitive strategies may help predict under which circumstances people solve problems particularly well.
http://swissinnovation.org/news/web/2013/10-130513-b4.html

Bar Proximity as a Risk Factor

(UNIBE, May 15, 2013)

Alcohol consumption is known to cause several types of psychiatric, liver, and neurological diseases. Now, a study from the University of Bern shows a correlation between alcohol-related diseases and proximity to bars. Using the Swiss National Cohort dataset, researchers were able to show that the number of bars within one kilometer of a residence and the distance to the nearest bar both had a correlation with risk of death from alcohol-related diseases. The statistical study was controlled for many factors, but a causal relationship could not be established.
http://swissinnovation.org/news/web/2013/10-130515-59.html

11. Technology Transfer / IPR / Patents

Two Innovative Start-Ups Win Venture Kick Award

(Venture Kick, April 03, 2013)

The two Venture Kick winners, Mabimmune and CombaGroup, could not be more different. While Mabimmune focuses on diagnosing and treating heart attacks, the CombaGroup has developed an innovative technique for cultivating salad efficiently at any time of the year. The winners will be supported by a grant of up to CHF 130,000 from the startup funding initiative Venture Kick.
http://swissinnovation.org/news/web/2013/11-130403-e5.html

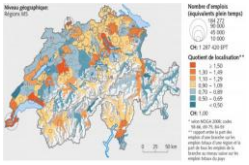
EuRobotics Techtransfer Award to EPFL

(AlpICT, April 08, 2013)

This year at the European Robotics Forum, Europe Laboratory of Intelligent Systems (LIS) at EPFL and senseFly S.A. won the 10th euRobotics Technology Transfer Award. The European Robotics Forum 2013 hosts several hundred scientists, companies and robotic represenatives from the European Commission which networks and exchanges the latest industry and research insights through seminars. SenseFly, a spin-off of the LIS, is a leading robotic and artificial intelligence research firm where they develop and market autonomous mini-drones and related software solutions for civil professional applications such as: accurate mapping of mining sites, quarries, forests, construction sites, crops, etc. The purpose of the "euRobotics Technology Transfer Award" is to showcase the impact of robotics research and to heighten the profile of technology transfer between science and industry
http://swissinnovation.org/news/web/2013/11-130408-3f.html

Swiss Statistics on Regional Disparity

(SERI, April 15, 2013)



The Swiss Federal Office of Statistics released a report on regional disparity in Switzerland. The report covers a wide range of topics in the area of economics, especially socioeconomics. Although complete uniformity is not expected by the federation, these statistics do help show whether important measures are converging or diverging.
http://swissinnovation.org/news/web/2013/11-130415-52.html

Collaboration to Find Hepatitis C Treatment Options for Chinese Patients

(Roche, April 15, 2013)

Over 10 million patients in China are chronically infected with Hepatitis C Virus (HCV). The majority of those infected are genotype 1b, which has been highly responsive to Danoprevir, an investigational protease inhibitor that is active against genotypes 1 and 4. Roche and Ascletis are working together to develop a therapy and a new treatment which will address HCV. Under the terms of agreement, Ascletis will fund the regulatory affairs, development of danoprevir in China, Taiwan, Hong Kong, and Macau while receiving payments from Roche if certain milestones are made in commercialization and development. With both powerful institutions working together, the goal to commercialize a direct antiviral agent (DAAs) will unfold a novel treatment for patients in need.
http://swissinnovation.org/news/web/2013/11-130415-d3.html

Startup Developed Successful Tortilla Machine

(Le Matin, April 25, 2013)

Inspired by a Mexican student's frustration at being unable to find good tortillas in Europe, students at the ETH Zurich have developed a prototype tortilla machine. A capsule of tortilla paste, the size of a yoghurt pot, is inserted into the machine that then produces a hot tortilla. Flatev, coined from Flatbread and Evolution, is the name of the start-up developing the machine. Having already won prizes in various start-up competitions, the project was presented to tortilla consumers and producers in San Francisco in 2012, attracting lots of interest. The tortilla market is worth ten billion dollars in the US alone, and flatbreads are popular worldwide. With 19 other Swiss start-ups, the team will soon join the Venture Leaders' program at swissnex Boston.
http://swissinnovation.org/news/web/2013/11-130425-42.html

Silicon Valley Startup Camp by Vaud

(AlpICT, May 01, 2013)

Starting in September 2013, young innovators in Vaud will have the chance to cultivate their entrepreneurial spirit in the hotbed of innovation that is Silicon Valley. The initiative, which will take a group of Swiss students to Silicon Valley, was born out of discussions that took place between Swiss and American scientists, educators, finance professionals and tech-sector market participants. Startup Camp attendees will have a packed schedule of workshops designed for budding entrepreneurs, visits to the campuses of Berkeley and Stanford, "insider" tours of several companies and meetings with venture capitalists. The program is open to Swiss residents currently studying in Vaud. Up to ten students will be selected by a jury made up of representatives from each of the project partners.
http://swissinnovation.org/news/web/2013/11-130501-72.html

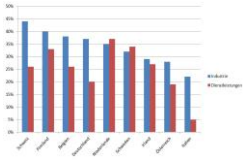
US Company supports EPFL Innogrants for 5 years

(startupticker.ch, May 02, 2013)

The US company CA Technologies has entered into a five-year partnership with the EPFL to help drive innovation start-up projects. Over this period, CA Technologies will make a six-figure sum available to the institution. CA Technologies will be contributing to a special fund at EPFL called The Innogrants which was set up in 2005 to promote innovation and support young entrepreneurs with new business ventures at EPFL. To date, the fund has enabled the creation of 30 start-ups; ten in each of the field of life sciences (biotechnologies and medical devices), in the broad field of micro- and nanotechnologies, including electronics and energy, and in information technologies (from computing to software and Internet technologies). To qualify for funding support, suitable projects are evaluated by the Head of the Innogrants program at EPFL.
http://swissinnovation.org/news/web/2013/11-130502-3c.html

Survey of Innovation Activities within the Swiss economy

(SERI, May 03, 2013)



According to the latest KOF innovation survey, Switzerland and Denmark still top the list of European countries. In the industrial sector, Switzerland holds the second position after Denmark. In the services sector, Switzerland also holds the second position after Denmark. The specific strong points of the Swiss economy include the large proportion of companies engaged in R&D activities and the ability to transform innovations into market successes. Switzerland does particularly well in the SME sector. Companies with fewer than 250 employees are generally more innovative than those in all other EU countries. In Switzerland, the capacity for innovation is largely distributed across different company size categories. The combination of a very innovative SME sector and a remarkable number of large multinational companies pursuing highly intensive R&D activities is a structural advantage of the Swiss innovation system.
http://swissinnovation.org/news/web/2013/11-130503-3f.html

CO_2 Neutral Aluminum Production by Solar Reactor

(ETH Zurich, May 03, 2013)

The technology relates to methods for reducing metal oxides under reduced pressure and by using solar energy. It may be applied for a low-carbon footprint, renewable metal extraction (Al, Mg) or as a step in fuel production (hydrogen/syngas) via a thermochemical redox cycle for water and carbon dioxide splitting. Currently, aluminum production from alumina is based on the highly energy-intensive electrochemical Hall-Héroult process resulting in greenhouse emissions of 0.70 kg CO_2-equiv/kg Al. The use of concentrated solar energy as the source of hightemperature process heat offers considerable energy savings and reduced concomitant CO_2 emissions. When the reducing carbonaceous agent is derived from a biomass source, the solar-driven carbothermal reduction is CO_2 neutral.
http://swissinnovation.org/news/web/2013/11-130503-d0.html

faceshift und TransCure Biosciences Win Venture Kick Award

(Venture Kick, May 16, 2013)

The two startups faceshift and TransCure Biosciences distinguished themselves in the venture kick final. The winners, chosen by the startup funding initiative venture kick, will receive top grants of CHF 130'000. Faceshift's software, developed at ETH Zurich and implemented at EPFL, uses a simple camera with motion and depth sensors to create a genuine avatar that imitates facial expressions in real time. Leading studios in the game and film industries already use this innovative software to create amazing animations. TransCure Bioscience, founded by a professorial team from the universities of Geneva, Pretoria and Zurich, has developed a unique method of "humanized immune system." This can facilitate the search for new treatments against AIDS, immune system disorders and potentially other diseases.
http://swissinnovation.org/news/web/2013/11-130516-31.html

Creative Platform Links Designers with Companies

(startupticker.ch, May 21, 2013)

The association Briques Créatives has launched a web platform linking young French-speaking graduates in visual arts, design and communication and SMEs, start-ups and associations. The founders noticed that many young designers, photographers and web designers struggle to find employment after their studies, whereas many SMEs struggle to find creatives to meet their growing communication needs. The platform enables companies to purchase 'bricks', comprising clearly defined and priced communication services and graphics, from young designers in western Switzerland. Platform managers check 'brick' requests, identify potential creators and link both parties up. Platform benefits include finding many modules and service providers together on one site, price transparency, ease of use and effective project management. Practical advice on admistrative matters is also provided.
http://swissinnovation.org/news/web/2013/11-130521-4b.html

Talent Exchange Platform as Finalist in Startup Competition

(startupticker.ch, May 21, 2013)

A startup based in Ticino, TIMEREPUBLIK transports the old equation, "time is money," into the new Sharing Economy. The online platform enables anyone, anywhere, to trade their talents for time credits, which they can then exchange for the services they need from another TIMEREPUBLIK community member. TIMEREPUBLIK is one of 16 companies, and the only Swiss company, chosen to present at LeWeb London 2013. In addition to introducing their company to a large audience before a panel of venture capital experts, the 16 finalists have access to the conference's dedicated Startup Competition Lounge to demonstrate their product.
http://swissinnovation.org/news/web/2013/11-130521-ae.html

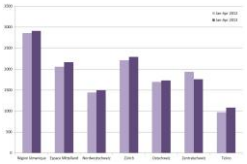
Swiss Team Joins Climate-KIC

(startupticker.ch, May 23, 2013)

WWF Switzerland, HUB Zurich, and seif - Social Entrepreneurship Initiative & Foundation are joining the European Climate-KIC network, a network of companies and organizations solving global climate change problems. These new members strengthen efforts to solve climate change problems by building on existing entrepreneurial foundations and uniting under a common goal. The group will promote responsible use of natural resources and changes to society to be more aware of climate change.
http://swissinnovation.org/news/web/2013/11-130523-e4.html

More New Swiss companies in 2013

(SERI, May 31, 2013)



In the first four months of 2013, 13,442 new companies were registered in the Swiss commercial register. This amounts to an additional 2% or 258 new companies registered compared to the previous year. Based on projected estimates, more than 40,000 new companies could be registered in the Swiss commercial register for the first time in history in 2013. Central Switzerland recorded a sharp decline in new registrations of –9%, while other regions recorded increases in new registrations between +2% and +11%. The ongoing trend of increasing registrations of new companies in Ticino since 2011 (+19% in 2012 compared to 2011) is reflected in the current year (+11%).
http://swissinnovation.org/news/web/2013/11-130531-8b.html

Swiss Technology Transfer Association
http://www.switt.ch/html/home.php

Swiss Federal Institute of Intellectual Property
https://www.ige.ch/en.html

12. General Interest

Dalai Lama Calls for a Global Sense of Responsibility at University of Bern

(UNIBE, April 16, 2013)

As a role model for leadership and accountability, the spiritual leader of Tibet, the 14th Dalai Lama Tenzin Gyatso, was invited to lecture on sustainable development at the University of Bern. Describing himself as an "old man of the 20th Century", a century of violence, the 78-year-old Nobel Peace Prize holder challenged students to make the 21st Century one of peace and dialogue. He emphasized the importance of supporting science and technologies to promote sustainability, and using education to change reality and perceptions. He called for a rethink of problems like global warming or overpopulation, considering the whole of humanity, not just individual nations or groups. He concluded: "We need a global sense of responsibility, a sense of unity".
http://swissinnovation.org/news/web/2013/12-130416-36.html

New Student Job Platform

(ETH Zurich, April 23, 2013)

ETH "gethired" is a new online platform geared to graduate job-seekers. Career advisor Rahel Chopathar and Julian Koelbel launched the platform on April 23 and are exciting to help students find an entry-level job in line with their education. Employers in turn will gain new talent for their organizations. Although ETH gethired primarily caters to ETH students, other university students may apply through the portal. Telejob.ch will pass into the ETH gethired for a new profile. Together Telejob and ETH Career Center will administer the new job-platform. It will be presented at the Polymesse 2013, an annual recruiting event on the ETH Zurich where140 companies participate.
http://swissinnovation.org/news/web/2013/12-130423-d4.html

Escaping School Pressure with a Little Cafe Oasis

(ETH Zurich, May 14, 2013)

Just about any time during the semester can be hectic. But “A little bit of freedom” or "Kleine Freheit", a new cafe recently opened by two ETH Zurich students, Max Boosfeld and Elias Kleimann, have brought a sort of refuge for stressed students on campus. Students, local residents and passers-by congregate on sofas and folding chairs over coffee and home-made cakes, peruse the open bookcase, or, simply enjoy the blissful pleasure of doing nothing at all. Appealing to the City of Zurich’s Office of Parks and Open Spaces, the Cafe was built over the course of 6 months and it's located in the park on Weinbergfussweg making it an ideal spot for local businesses to thrive. Financially, the Cafe survived through a crowd-funding basis of a 200 Swiss Franc donation in a return for a daily free drink.
http://swissinnovation.org/news/web/2013/12-130514-7d.html

LCD Inventor Awarded

(swissinfo.ch, May 28, 2013)

Swiss physicist Martin Schadt, inventor of the world’s first flat-panel liquid crystal display – better known as LCD – has won the lifetime achievement award at the European Inventor Award 2013 event. Schadt’s technology paved the way for low-energy devices such as flat screen televisions, tablet computers and mobile phones now used by millions of people worldwide. The European Patent Office announced the winners, honoured for their contribution to social, economic and technological progress.
http://swissinnovation.org/news/web/2013/12-130528-03.html

13. Calls for Grants/Awards

Best Energy Project Applications for "Watt d'Or" 2014

(Swiss Government, May 01, 2013)

Switzerland's energy sector is on the move. The main driving force is global trends such as constantly increasing energy consumption throughout the world and the various associated problems. The "Watt d'Or" will be awarded for players and companies who research and develop energy technologies for the future, bring innovative products onto the market, are pioneers in the use of new technologies, create solutions that unite energy and environment awareness with comfort requirements, aesthetics and economic interests. Nominations for the "Watt d'Or" 2014 award should be submitted via the special form, by e-mail or by post. Closing date for submissions: 31 July 2013.
http://swissinnovation.org/news/web/2013/13-130501-e1.html

Efficient Boat Design Competition

(EPFL, May 08, 2013)

EPFL and Swiss company Hydros are launching a student design competition centered on efficient boat designs. Each student team is given a starter kit consisting of a hydrofoil-based boat with a single electric motor. They are then tasked to optimize the design in terms of performance and energy efficiency. There are two categories for competition, one focused on small boats and another focused on maritime transport vessels. A head-to-head competition will be held in the summer of 2014 on Lake Geneva.
http://swissinnovation.org/news/web/2013/13-130508-d2.html

Applications for Swiss Startup Awards 2013

(startupticker.ch, May 15, 2013)

The Swiss Startups Awards 2013 will include three prizes for entrepreneurs: besides the STARTUPS.CH Award, awarded by the eponymous company to online start-ups, AXA Insurance will provide a special Innovation Award and insurance services, and the energy company Axpo will give its first Energy Award for innovative business ideas in energy production, energy technology, power transmission, energy storage and electrical engineering. Each prize is worth CHF 50'000. Applicants’ business plans must fulfill two criteria for each award: the business idea must be implementable with an initial capital of maximum CHF 1 million, and the company must not yet have been founded. Business plans can be submitted online in German, French, Italian or English by 30 June 2013 to www.swiss-startups-awards.ch.
http://swissinnovation.org/news/web/2013/13-130515-53.html

Call for Regional Innovative Business Ideas Award

(startupticker.ch, May 23, 2013)

Founders with an innovative business idea can apply by the end of July for the MSM Award. The winner will receive a full start-up service package, including support to develop its business plan, legal advice, an office and web services. Fewer than half of new businesses survive their first five years, usually due to a lack of finance, legal expertise, administration or infrastructure. The Winterthur MSM Group's Award will help build a solid foundation for success. There are no age restrictions, and no business plan or marketable products are needed – just an innovative, sustainable, job-creating idea. The applicant company should have the potential to create and maintain as many and as varied jobs as possible in the Winterthur region. Applications by end of July
http://swissinnovation.org/news/web/2013/13-130523-9b.html

Ideas Competition to Fight Food Losses and Food Waste

(Swiss Government, May 30, 2013)

Our Common Food is a competition looking for the best practical ideas to solve the problems of food losses and food waste in both Switzerland and developing countries. Develop an inspiring idea for a product, service, or campaign that reduces food losses or waste within the food supply chain, from farm to consumption. Make sure that your idea is innovative and relevant to the cause! Ideas can be focused on either food waste in Switzerland or on the postharvest losses of cereals and pulses in developing countries. Each participant must have finished his or her studies within the past two years or be currently enrolled as a student at a university, university of applied sciences, or technical university in Switzerland or in a developing country. Apply with your idea until 30 August 2013.
http://swissinnovation.org/news/web/2013/13-130530-6e.html

Upcoming Science and Technology Related Events

Art Basel 2013
Jun 13-16, 2013
http://basel.artbasel.com
Art
Basel

Energie-Effizienzmanagement im Unternehmen
Jun 19, 2013
http://tinyurl.com/kurs-eem
Energy / Environment
HWZ Hochschule für Wirtschaft, Zürich

Swiss Telecommunication Summit
Jun 20, 2013
http://www.asut.ch
Information & Communications Technology
Kursaal Bern

The European CLINAM & ETPN Summit
Jun 23-26, 2013
http://www.clinam.org/
Life Science
Congress Center Basel

Annual Conference energie-cluster.ch
Jun 25, 2013
http://tinyurl.com/energie-cluster
Energy / Environment
Umwelt Arena, Spreitenbach

Congress: Intl. Association for the Psychology of Religion
Aug 27-30, 2013
http://www3.unil.ch/wpmu/iapr2013
Medical / Religion
University of Lausanne

CTI Medtech Event
Aug 27, 2013
http://www.ctimedtechevent.ch/cti-medtech-event-2013
Life Science
Kursaal, Berne

42nd Swiss Venture Day
Sep 11, 2013
http://www.cti-invest.ch/
Innovation / Entrepreneurship
SIX Swiss Exchange Zurich

ScienceComm'13 Congress
Sep 26-27, 2013
http://tinyurl.com/sciencecomm-13
Science, Networking
La Chaux-de-Fonds

CERN Open Day
Sep 28-29, 2013
http://outreach.web.cern.ch/outreach/visites/index.html
Particle Physics
CERN, Geneva

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

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

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

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

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

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

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

Switzerland.

swissnex boston
Consulate of Switzerland