



Science-Switzerland, October – November 2010

News on Swiss science, technology, education and innovation

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Breakthrough Of World’s Longest Railway Tunnel

The longest railway tunnel in the world, Gotthard base tunnel, has become a reality. 30 km from the north portal and 27 km from the south portal, the final breakthrough of the Gotthard took place. The tunnel breakthrough was highly accurate. The new base tunnel will make Swiss – and also European – transport policy more sustainable. With a rock overburden of up to 2500 m, the Gotthard base tunnel is also the most deeply set rail tunnel in the world. The Gotthard base tunnel consists of two parallel single-track tubes.

<http://tinyurl.com/00-101015>

(Admin, October 15, 2010)



swissnexDay’10 – Internationalization Of Swiss Higher Education Institutions

For its second edition, the swissnexDay’10 gathered around 350 stakeholders of the Swiss scientific, economic, and political stage. The focus was set on the internationalization of Swiss higher education institutions and the role of the swissnex network in pushing back global boundaries. swissnexDay featured talks by Interior Minister Didier Burkhalter and other leaders as well as swissnex directors and those who have benefited from the Swiss network of science diplomacy outposts. The event took place at the EPFL Rolex Learning Center and ECAL. Minister Burkhalter emphasized the importance of scientific diplomacy, which Switzerland revolutionized by opening the world’s first swissnex in Boston 10 years ago as part of the *Swiss Knowledge Network*. He says, international partnerships are the key for the future development of Swiss universities, universities of applied sciences, and institutes of technology. swissnexDay’10 speeches and press review: <http://www.swissnex.org/documentation>

<http://tinyurl.com/00-101108>

(swissnex, November 08, 2010)



1. Policy

Reinforce Swiss-American Scientific Ties

Federal Councilor Didier Burkhalter paid an official visit to the U.S. from 28 October to 1 November accompanied by a Swiss scientific delegation. The aim of the visit is to establish and reinforce existing ties between the scientific communities of both countries. The head of the Federal Department of Home Affairs (FDHA) took part in the ceremony marking the 10th anniversary of swissnex in Boston before moving on to San Francisco. Mr. Burkhalter witnessed the signing of an agreement establishing a collaboration between EPFL and Harvard Medical School in Boston.

<http://tinyurl.com/01-101010>

(Admin, October 10, 2010)



Swiss Delegation At The Convention On Biodiversity In Nagoya

(Admin, October 25, 2010)

The Swiss Delegation to the Convention on Biological Diversity in Nagoya, headed by Minister Moritz Leuenberger, presented 4 contributions of Switzerland to the conservation of global biodiversity. Mr. D'Alessandro, Federal Office for the Environment, presented instruments to ensure that genetic resources provided by other countries are in accordance with the Convention. Mrs. Biber-Klemm, Swiss Academy of Sciences, presented strategies and instruments to increase awareness of the ABS principles related to access to genetic resources. Mr. Meienberg, Berne Declaration, explained the contribution of his non-governmental organization to raise public awareness about access and benefit sharing. Mr. Zygmunt, Public Affairs Manager Syngenta, presented the "Operation Pollinator" project which aims to create an additional 10,000 ha of dedicated habitat for pollinating insects.

<http://tinyurl.com/01-101025>

ETH Zurich Partners With EU's Lisbon Strategy

(ETH Zurich, October 27, 2010)

ETH-Zurich President Ralph Eichler and Head of Research Roland Siegwart traveled to Brussels to see the latest developments in research, innovation and science at the European Commission. ETH Zurich is one of the frontrunners in the search for definitive answers and solutions to combat global warming. Along with other project partners, it receives around EUR 100 million from the European Institute of Innovation and Technology for the Knowledge and Innovation Community. The visit to Brussels also included a meeting with Robert-Jan Smits, the head of EC's Research Directorate-General. The discussions centered on the European Research Area and the role of excellence at universities.



<http://tinyurl.com/01-101027>

Future World Leader In Green Technologies

(Swissinfo, November 11, 2010)

The government wants Switzerland to be a world leader in green technologies by 2020 and has unveiled a master plan to boost research and innovation. Just which products could result from this can be seen in the Cleantech Expo, which reveals such Swiss inventions as eco-flush toilets and coffee machines powered by hydrogen. The Cleantech Masterplan is designed to drive the government, universities and the private sector to put greater emphasis on green technologies.



<http://tinyurl.com/01-101111>

Swiss Mandate Defined For Climate Change Conference

(Admin, November 17, 2010)

The 16th United Nations Climate Change Conference takes place in Cancún (Mexico) from 29 November to 10 December. The Swiss Federal Council has defined the Swiss Delegation's mandate for the negotiations. Doris Leuthard, the President of the Swiss Confederation, will represent Switzerland at the ministerial meeting. The main aim of the 16th United Nations Climate Change Conference in Cancún is to adopt an equitable package of resolutions that will define the key elements of a new climate agreement.

<http://tinyurl.com/01-101117>

Revised Regulation On Research

(Admin, November 24, 2010)

The Swiss Federal Council has set to January 1 the date of the coming in force of the partially revised regulation on research. Moreover it has approved the internal regulation of the Innovation Promotion Agency (CTI), which will become an extraparlimentary commission endowed with decision-making competencies. The new disposition specify certain points concerning the CTI's encouragement activities for research and development projects, as well as the support for the creation and the development of companies with science-based activities.

<http://tinyurl.com/01-101124>

2. Education

Didier Burkhalter At ETH Zurich Day

(Swissinfo, November 20, 2010)

The ETH Zurich has contributed significantly to Switzerland's prosperity, according to Interior Minister Didier Burkhalter. Speaking at the traditional ETH Zurich-day, Burkhalter praised the institute as a centre of knowledge in



Europe. He also called on ETH Zurich scientists to be aware of their responsibility to the rest of the world. Burkhalter emphasized the importance of fostering research partnerships with countries like China, India and Brazil while maintaining good “scientific diplomacy” with traditional partners like the US and Germany.

<http://tinyurl.com/02-101120>

Memorandum Of Understanding In Neuroscience

(UNIZH, October 05, 2010)

The center of neuroscience at the University of Zurich and ETH Zurich has signed an agreement with the McGill University in Montreal, Canada, to further enhance collaboration between the two institutions. The memorandum of understanding sets specific domains of interest, in particular pain therapy, Alzheimer, modeling and reparation of synapses, neuro-immunology as well as genetic mechanisms of brain diseases. Exchanges between the three establishments will be promoted and fellowships will be available for PhD students.



<http://tinyurl.com/02-101005>

ERC Grant For Sustainable Solar Technology And Microbe Evolution

(Basel University, November 23, 2010)

The chemist Ed Constable and the evolution-biologist Dieter Ebert from Basel University will both be allocated CHF 3.3 Mio as an “ERC Advanced Investigator Grant” for their projects rated as excellent from the European Research Council. Constable works on sustainable technology in the lighting and solar energy field. On the other hand, Ebert studies the evolution of the microbes found in the intestine and on the skin. This contribution to advancement belongs to the most prestigious grants in Europe.



<http://tinyurl.com/02-101123>

3. Life Science / Health Care

Cancer Research Collaboration With The Ludwig Institute

(UNIL, October 06, 2010)

The University of Lausanne and the Ludwig Institute for Cancer Research signed an agreement to set up a new centre for cancer research within the university’s premises. The two sides will expand and strengthen collaborative efforts in fields covering concepts developed in the laboratory to clinical trials of therapeutic applications. The new Ludwig Institute for Cancer Research at the University of Lausanne (LICR@UNIL) will take full advantage of the worldwide network of the Ludwig Institute.



<http://tinyurl.com/03-101006>

Synthetic Genomics For Faster Flu Vaccine Response

(myScience, October 07, 2010)

Novartis announced an agreement with Synthetic Genomics Vaccines Inc. to apply synthetic genomics technologies to accelerate the production of the influenza seed strains required for vaccine manufacturing. The seed strain is the starter culture of a virus, and is the base from which larger quantities of the vaccine virus can be grown. The three-year agreement, supported by an award from the U.S. Biomedical Advanced Research and Development Authority, could ultimately lead to a more effective response to seasonal and pandemic flu outbreaks.

<http://tinyurl.com/03-101007>

New National Research Center On Mental Illness

(EPFL, October 07, 2010)

Three questions are driving the research of the new Swiss National Research Center (NCCR) entitled “SYNAPSY – Synaptic Mechanisms of Mental Illness”: how can we understand the biological basis of mental illness? how can we leverage clinical studies in genuinely innovative ways? and how can we create new forms of therapy and above all new medical training methods at the interface between the neurosciences and psychiatry that would enable an appropriate response to the dramatic increase in mental illnesses such as depression? NCCR Synapsy comprises four significant research programs to be conducted at EPFL, at the University of Lausanne, at the University of Geneva and the University of Basel, and also four cooperating clinics in close cooperation with the cantonal hospitals of Lausanne and Geneva.



<http://tinyurl.com/03-101007b>



Network To Study The Origins Of Schizophrenia

(UNIBAS, October 08, 2010)

The University of Basel and the Basel Psychiatric Clinic will take part in an EU project that studies the origins of schizophrenia by having a closer look at how genetic dispositions and environment factors influence the appearance of a disease. The "European Network of National Schizophrenia Networks Studying Gene Environment Interactions" will be financially supported by the EU 7th Framework Program and will gather scientists from 28 university research institutes around the world.

<http://tinyurl.com/03-101008>

Immune Cells Act As Tumor Killers

(UNIZH, October 11, 2010)

Researchers at the University of Zurich have discovered how albumen's interleukins 12 can "help" to the immune system in order that this latter controls or even destroys cancer cells. They have succeeded in identifying the specific type of cell that plays such a role. This discovery could lead to the development of new cancer therapies.

<http://tinyurl.com/03-101011>

New Therapeutic Strategies On Arthritis

(myScience, October 15, 2010)

The "Institute for Arthritis Research" is poised to develop new therapeutic strategies, thanks to an anonymous donation given to a foundation which has, in turn, decided to support the institute. The Department of Biochemistry at the University of Lausanne is at the forefront of research into inflammatory diseases with Professor Jürg Tschopp whose work has led to successful treatments for gout, one of the most typical forms of arthritis pains.

<http://tinyurl.com/03-101015>



Newest Eye Cancer Therapy Facility

(PSI, October 15, 2010)

On the occasion of the 25th anniversary, the Paul Scherrer Institute (PSI) inaugurated a new model of OPTIS (ophthalmologic proton therapy-installation) to treat eye cancer. OPTIS 2 is a pioneering therapy facility which directs a proton beam onto the retinal tumor. The new model includes all the newest technological progresses and is more comfortable for the patient. Due to its high standards, PSI has the highest number of eye cancer treatment cases in the world.

<http://tinyurl.com/03-101015b>



New Cellular Defense Mechanism Identified

(UNIL, October 18, 2010)

Chaperones can identify and degrade mutant or stress proteins poorly folded and assembled in nerve cells. If they are not counteracted, these toxic proteins cause illnesses such as Alzheimer's disease. Prof. Pierre Goloubinoff, University of Lausanne, and Paolo De Los Rios, EPFL, have recently identified a molecular mechanism allowing the Hsp70 chaperone, acting at the heart of cells, to unfold toxic proteins and give them the possibility of refolding correctly as functional, non-toxic proteins.

<http://tinyurl.com/03-101018b>

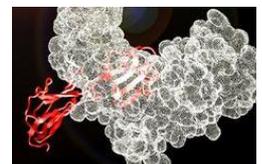


Human Proteome Fully Mapped

(ETH Zurich, October 21, 2010)

A research team from ETH Zurich and from the Institute for Systems Biology, Seattle, has used mass spectroscopy methods to fully map the human proteome for the first time. The researchers are making their data accessible via the ISB / ETH SRMAtlas to all researchers. The proteome data enables researchers to determine the number and type of proteins in any kind of biological sample using various mass spectrometric measurements. This is an important development that will significantly improve the reliability and reproducibility of proteomics.

<http://tinyurl.com/03-101021>



Early Detection Of Metastases

(ETH Zurich, October 27, 2010)

The main problem with cancer like breast cancer and skin melanoma is that the metastases can not be recognized non-invasively until the tumor has grown to a substantial size like half a centimeter. Before the cancer metastasizes



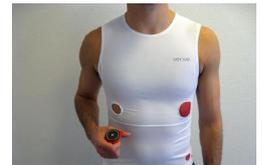
and builds up a tumor, it sends messengers through the lymph vessels to make it grow. A young scientist at ETH Zurich has found radio-labeled antibodies which can make the proteins that appear in the lymph vessels during this process visible on a PET scan. This way, the changes caused by the tumor can be detected before the metastasized tumor grows to a life-threatening size.

<http://tinyurl.com/03-101027b>

Finalist Swiss Technology Award

(CSEM, October 27, 2010)

Sense, a joint venture for physiological signal monitoring technology between CSEM and other Swiss partners, was officially nominated one of the three finalists in the start-up category of the "Swiss Technology Award". The Long Term Monitoring System technology, originally developed for the European Space Agency, was designed for non-intrusive and comfortable monitoring of astronauts' health. Currently, this portable system allows continuous and simultaneous measurement of main physiological signals such as electrocardiogram, respiration, blood-oxygen saturation, or body temperature. Biomedical applications are mainly aimed at professional and amateur sportspeople, as well as for medical patients.



<http://tinyurl.com/03-101027>

First Extensive Study On Evolutionary Medicine

(UZH, October 27, 2010)

The University of Zurich has set up the "Center for Evolutionary Medicine" under the direction of physician and mummy researcher, Frank Rühli. The goal of this unique scientific centre is to learn more about the evolution of human diseases and their possible causes. The scientists at the center will work closely together with researchers from around the world to extensively study evolutionary-medical questions.

<http://tinyurl.com/03-101027c>

Joint Research And Education Program On Neuroengineering

(EPFL, October 29, 2010)

Harvard Medical School and EPFL have established a joint research and education program aimed at improving quality of life for people with neurological disabilities. The Bertarelli Program in Translational Neuroscience and Neuroengineering also includes an endowment of a professorship in translational medical science. The inaugural incumbent will be William Chin, Executive Dean of Research at Harvard Medical School. Dr. Chin will oversee the development of the joint program, which creates a pathway from device design at EPFL to clinical testing at HMS and builds a bidirectional exchange for students and researchers.

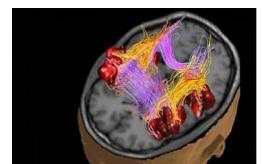


<http://tinyurl.com/03-101029>

Software To Create Map Of Vital Brain Connectivity

(EPFL, October 29, 2010)

The brain's inner network becomes increasingly more efficient as humans mature. A joint study from the EPFL and the University of Lausanne, in collaboration with Harvard Medical School, has, for the first time without invasive measures, verified these gains with a powerful new computer program. The software can create individualized maps of vital brain connectivity that could contribute to epilepsy and schizophrenia research. The universities plan to make the tool available early next year free of charge to hospitals around the world.



<http://tinyurl.com/03-101029b>

Study On How Light Affects The Brain

(Swisster, November 04, 2010)

Seasonal affective disorder (SAD) is a well-known phenomenon, one that disappears on bright days when the sunshine returns. Researchers at the University of Geneva have concluded a study that shows how the brain responds to blue light, a part of the light spectrum that is often in short supply in the winter, particularly in northern Europe. The research found that such ambient blue light, found in daylight, increased responses to the stimuli in the "voice area" of the brain and in the hippocampus, an area of the brain that is important for memory processes. The light also led to a tighter interaction between a part of the brain that regulates emotions and the hypothalamus, which responds to light to regulate biological rhythms.

<http://tinyurl.com/03-101104>



Link Between Aircraft Noise And Heart Attack

(Swisster, November 05 2010)

Individuals exposed to repeated noise from air traffic have a higher risk of dying from heart attacks, says a study by the University of Bern. Noise levels above 60 decibels are suspected of having detrimental effects on the body's nervous and hormonal systems. "Aircraft Noise, Air Pollution, and Mortality From Myocardial Infarction" was based on data from 4.6 million people throughout Switzerland over the past 30 years.

<http://tinyurl.com/03-101105>



Threat Through Pets

(Basler Zeitung, November 07, 2010)

Staphylococcus Pseudintermedius is a well-known antibiotic resistant bacterium among veterinarians that causes inflammation of the skin and serious infections of surgical interventions of cats and dogs. Recently, a human being had also been affected and had to undergo a special treatment. This proves that such multi-resistant pathogens can be passed on to human beings. This finding from the University of Bern should alert all veterinarians not to use human antibiotics for the treatment of animals otherwise even drugs of last resort become an exhausted option.

<http://tinyurl.com/03-101107>



'Fear' Processing Neural Pathways

(myScience, November 11, 2010)

Neurobiologists have identified, for the first time, clearly defined neural circuits responsible for the processing of fear states. These findings could ultimately help people suffering from post-traumatic stress disorder or anxiety disorders. Neurobiologists at the Friedrich Miescher Institute for Biomedical Research (FMI) have become the first to identify neural pathways and types of neurons in the amygdale, which play a key role in the behavioral expression of fear.

<http://tinyurl.com/03-101111>



Cancer Cells As Vectors For Vaccines

(20 Minutes, November 15, 2010)

The American scientist Melody Swartz, professor at the Life Science faculty at the EPFL, recently won the Robert Wenner 2010 Award of CHF 100'000, a prize awarded to scientists under the age of 45. The ceremony is to take place at the Paul Klee center in Bern. Melody Swartz works on how cancer cells could be used as vectors for vaccines or drugs targeting the lymph nodes. Her most recent work has been published in Science and Nature Biotechnology.

<http://tinyurl.com/03-101115>



Genetic Engineering In Mammalian Cells

(PSI, November 16, 2010)

Genetic engineering has become a prominent part of modern biology. It provides tools, with which researchers can cut out genetic information from cells, and further modify them before they insert them again. Scientists at the Paul Scherrer Institute have developed a new method, in which they can transfer a sequence of up to five genes in one step into the DNA of mammalian cells. This technique could also be used in the development of new drugs, since, as opposed to bacteria or yeast, mammals are closely related to humans.

<http://tinyurl.com/03-101116>

Focused Research On Invasive Cardiology

(UNIBE, November 16, 2010)

Bern University's director Urs Würigler and head of Medtronic-Switzerland Daniel Bach have signed a fixed-term contract establishing a "Medtronic professorship for invasive cardiology". Both parties hope for improvements in diagnosis and therapies for heart diseases and associated illnesses through this reinforcement of the research in the field of invasive cardiology and electrophysiology. The University Clinic for Cardiology at the Inselspital in Bern has the greatest experience in invasive cardiology of Switzerland. Medtronic, as one of the worldwide leader in medical device engineering, yearly invests circa 10 % of its turnover into research and development.

<http://tinyurl.com/03-101116b>



Depression Divides Switzerland

(Le Temps, November 18, 2010)

According to the Swiss Health Observatory, the French-speaking part of the country suffers an over-diagnosis of depression, whereas the German-speaking part tends to under-diagnosed. The Federal Office of Public Health confirms the statement on the basis of data collected by the surveillance network "Sentinella".

<http://tinyurl.com/03-101118>

Peptide Synthesis In The Focus

(Le Temps, November 18, 2010)

By supporting research, Debiopharm wants to participate to the growing of French-speaking Switzerland in the life sciences field. The amount of the "gift" has not been revealed. The "Debiopharm Laboratory" has been opened at the Haute Ecole spécialisée de Suisse occidentale (HES-SO) in Sion. This laboratory will focus on peptide synthesis and Bertrand Ducrey, Debio CEO, explains that the intention is to offer a new tool as well as new competencies to the school to create innovation.

<http://tinyurl.com/03-101118b>

Targeting Viral DNA

(UNIBAS, November 22, 2010)

Viruses are triggers for illnesses that are difficult to fight. The precise breakdown of the infection mechanism is therefore decisive for the development of antiviral drugs. In her dissertation, the biologist Anne Neef studies a method with which the virus' genome can be made visible inside the host cell. Until today, there was no way of selecting which DNA would be marked once a virus was in a host cell. Anne Neef has now found a way of marking only the viral genome, allowing the study of its pathway of infection.



<http://tinyurl.com/03-101122>

Ethnic Group Face Recognition

(Le Temps, November 23, 2010)

Researchers from Fribourg and Glasgow have proven that our brain only responds specifically to faces belonging to the same ethnic group as our own. Even though 3-month-old toddlers have the capacity to discern, they rapidly lose it. Roberto Caldara, from Fribourg University, is at the origin of this study published in Proceedings of the national academy of science early November. He explains that if, to Europeans, all Chinese seem to look similar it's not due to their dark hair and eye color but simply because our visual system has learned to classify them in a much broader category. He points out that those results are universal and apply to all humans.



<http://tinyurl.com/03-101123>

High-Precision For Gene Therapy Targets

(UNIGE, November 23, 2010)

At the faculty of medicine of Geneva University, Jeremy Luban's laboratory has just achieved a high impact statistical study on retroviral penetration in human DNA. The researchers have indeed been able to define, and precisely localize, three sites where different retroviruses insert into the cell's DNA. These findings are published in the PLoS Computational Biology journal and give hope for advancements in gene therapy, allowing a high precision targeting based on the use of retroviruses as carriers of the repair-genes towards precise locations in the genome.

<http://tinyurl.com/03-101123b>

Substitutes To Breast Milk

(myScience, November 23, 2010)

Oligosaccharides in the breast milk protects newborns from viruses and bacteria. Researchers at Zurich University have identified a specific milk-oligosaccharide, which impacts on the intensity of a gastroenteritis. To investigate this matter, they work with mice deficient in specific milk-oligosaccharides. This finding opens new possibilities for the production of breast milk substitutes with the addition of these complex saccharide molecules.



<http://tinyurl.com/03-101123c>

Rapid Allergy Profile Diagnostic Platform

(Debiopharm, November 23, 2010)

Debiopharm Group, an independent specialist in global bio-pharmaceutical development in the field of oncology and regarding certain serious diseases, has announced the winner of the Debiopharm Valais Life Sciences Prize.



This year, Abionic S.A., represented by its founder and executive director Dr Nicolas Durand, won the prize for a new diagnostic platform, the abioDISC, which measures patients' allergy profiles rapidly, simply and economically. The abioDISC is used in conjunction with an abioSCOPE reader, connected to the doctor's computer via a simple USB connection.

<http://tinyurl.com/03-101123d>

Cell Communication Against Infection

(UNIBAS, November 24, 2010)

Bacteria-infected cells have a strategy for informing their neighbor-cells of the infection. All alarmed cells can as a collective come up with a defense reaction against the intruder. The research team of Prof. Cécile Arrieumerlou at the bio-center of Basel University have discovered these mechanisms. The finding has been published in the American journal Immunity of the Cell Press publisher. The question of which messenger the infected cell uses in order to alarm its neighbors remain open.

<http://tinyurl.com/03-101124>

Heart Clip For Safer Surgery

(UNIZH, November 25, 2010)

Blood clots can travel from the heart to the brain and cause strokes. That has long been known by surgeons. Until recently, the surgery methods were not satisfying. Heart surgeons at Zurich University Hospital work intensively on new possibilities for the surgery on elderly patients to be as gentle as possible. They have now developed a heart-clip, which could change that, and avoid the formation of blood clots.



<http://tinyurl.com/03-101125>

Glucose Metabolism Research

(MyScience, November 25, 2010)

World-renowned for his research on diabetes, Professor Bernard Thorens, from the Center for Integrative Genomics at Lausanne University, has been awarded with the "ERC Advanced investigator Grant 2010". This grant for advanced researchers, of maximum EUR 2.5 mio, allocated by the European Research Council (ERC) will support Prof. Thorens research for five years. His project is called "An integrated network of glucose sensing cells in glucose homeostasis", and will study various aspects related to the glucose metabolism and the insulin secretion, which mechanisms is affected in patients suffering from diabetes type 2, using genomics, genetics, and bioinformatics.



<http://tinyurl.com/03-101125b>

Hox Genes In Mammals

(Frontiers in Genetics, November 30, 2010)

Denis Duboule receives the Prix International de l'INSERM for his entire scientific career. The worldwide specialist of developmental genetics is a pioneer in research on Hox genes, the "architect genes" responsible for coordinating body patterning during embryonic life. His discovery of Hox genes in mammals has allowed the development of an entire area of active research. The Director of the NCCR Frontiers in Genetics is Head of the Department of Zoology and Animal Biology at the University of Geneva. Denis Duboule, who holds a joint chair UNIGE/EPFL, also directs a laboratory of Developmental Genomics at the EPFL.



<http://tinyurl.com/03-101130>

Psychological Study Network On Organ Transplant

(UNIBAS, November 2010)

The Swiss Transplant Cohort Study (STCS) is a nation wide cohort study including all patients after solid organ transplantation in Switzerland that was launched. The uniqueness of the STCS lies in its comprehensive measurement of biophysiological measures as well as a number of selected sociodemographic, behavioral and psychosocial factors from pre-transplantation to lifelong post-transplantation. Increasing evidence shows some of these factors do impact long term outcome after transplantation. A better understanding of the independent contribution of these factors to outcome is a first important basis before engaging in intervention research. The coordination of the measurement of these factors and their data collection is done by the Psychosocial Interest Group (PSIG) of the STCS, lead by the University of Basel.

<http://tinyurl.com/03-1011>



New Combination Treatment Against Whipworm Infection

(Swiss Tropical Health Institute, November 2010)

Researchers from the Swiss Tropical and Public Health Institute in Basel, together with partners from Tanzania and the UK have tested – for the first time – a combination treatment of mebendazole plus ivermectin against whipworm infection (*Trichuris trichiura*) among school-aged children in Zanzibar. They found a considerably higher efficacy of the combination treatment compared with standard single-dose oral mebendazole or albendazole. This drug combination was well tolerated. The study has been published in the latest issue of "Clinical Infectious Diseases".

<http://tinyurl.com/03-1011b>

4. Nano / Micro Technology / Material Science

Quantum Processes In Single Molecules Monitored

(UNIBAS, October 04, 2010)

Thanks to a new process developed by the research team of Prof. Stefan Willitsch at the University of Basel, individual quantum processes in single molecules can be studied and monitored with high precision. Researchers are able to fully control the rotating and vibrating movements of molecules that are trapped. The technology allows scientists to gain knowledge on the fundamental mechanisms that lie at the core of chemistry. In addition, it adds a milestone to the development of quantum computers.

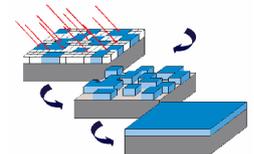
<http://tinyurl.com/04-101004>

Low Cost Production Of Single Crystal-Like Films

(ETH Zurich, October 08, 2010)

Researchers at ETH Zurich have developed a technology that provides a low cost method to produce biaxially textured metal films which are expected to have characteristics similar to single crystals. Low energy ion irradiation of uniaxially textured films results in a selective sputtering process which leads to the formation nanocrystals having the same out-of-plane and in-plane crystallographic orientation. Biaxially textured films are obtained through epitaxial growth on the nanocrystals. The technology has the potential for enhancing the reliability of micro- and nano-systems.

<http://tinyurl.com/04-101008>

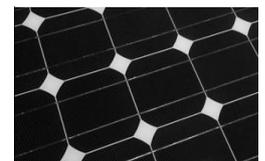


Novel Nanowires For A New Generation Of Technology

(EPFL, October 14, 2010)

The EPFL Laboratory of Semiconductor Materials, in collaboration with the University of Barcelona, has developed a novel nanowire based heterostructure adding new advanced functionalities. GaAs nanowires are grown by a catalyst-free method that guarantees the formation of high quality crystal structures and avoids the use of external metal-catalysts that would endanger any device application. This new type of heterostructures opens a new avenue to the fabrication of highly efficient single-photon sources, novel quantum optics experiments, as well as the realization of intermediate-band nanowire solar cells for third-generation photovoltaics.

<http://tinyurl.com/04-101014>



Electrostatic Nano-Trap To Isolate Nanoparticles

(ETH Zurich, October 14, 2010)

Researchers at ETH Zurich have developed a new and more efficient way to individually isolate small liquid particles. In doing so, they were able to study them over an arbitrarily period of time. They achieved such an operation by halting nanoparticles in suspension at a fixed position using an electrostatic field. The device they have designed is therefore able to counteract the Brownian movement associated with free particles in a medium.

<http://tinyurl.com/04-101014b>



Movements Of Magnetic Monopoles Captured

(PSI, October 17, 2010)

A team of researchers at the Paul Scherrer Institute in Switzerland and University College Dublin have managed to create monopoles in the form of quasiparticles in an assembly of nanoscale magnets and to observe how they move using a microscope at the Swiss Light Source (SLS) to make the magnetic structures visible. As with the elementary monopoles, each monopole is connected with a "string" to a monopole of opposite charge. These results could also provide a basis for the development of future electronic devices.

<http://tinyurl.com/04-101017>



New Cell Lab On A Chip

(ETH Zurich, October 21, 2010)

Two ETH researchers, Nils Goedecke und Ralf Streichan, succeeded in developing bio chips for cell biology. With this new technology, also known as "lab on a chip", separate parts of a cell can be analyzed through gases and fluids. This method is easier to apply and only minimal pieces of tissue are needed which allows it to test also human cells. The results provide us with fundamental knowledge on cells and could be used in medicine trials.

<http://tinyurl.com/04-101021>



Perfect Reflection By Single Atom

(ETH Zurich, November 03, 2010)

Physicist Mario Agio has been awarded the 2010 Latsis Prize of ETH Zurich. He managed to provide the theoretical proof that light can be perfectly reflected, mirror-like, from a single atom. He thereby solved one of nano-optics' fundamental problems and paved the way for future applications. Optical switches using light pulses may one day replace the electronic circuits that are currently in use. They can be utilized in quantum computers which would allow for a considerably faster computing speed.

<http://tinyurl.com/04-101103>



Non-Woven Fabric Oilguard

(HeiQ, November 04, 2010)

The Swiss Innovation Forum awarded HeiQ Materials AG the Swiss Technology Award in the category Maturity Stage for its development of Oilguard, a non-woven fabric which protects coastal areas and beaches from oil spills. Oilguard was co-developed by Swiss companies HeiQ and Beyond Surface Technologies AG as well as TWE of Germany when the Deep-water Horizon catastrophe occurred in the Gulf of Mexico in April. The prize was given to the oil absorbent and water repellent fabric because it was developed for coastal and beach protection in record time and that it is the only available technology for preventing oil contamination today.

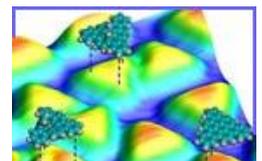
<http://tinyurl.com/04-101104>

Towards Graphene-Like Materials

(Empa, November 08, 2010)

On nanoscale dimensions, silicon, which is at the present stage the most commonly used material in semiconductor technology, reaches a limit. Due to its outstanding electronic properties, graphene is considered a possible replacement. Currently, there is no easily applicable method for large-scale processing of graphene-like materials. Empa researchers of the nanotech@surfaces Laboratory reported on a surface chemical route to fabricate small fragments of graphene, so-called nanographenes.

<http://tinyurl.com/04-101108>



Noise-Free Nanotech Laboratory

(PC World, November 12, 2010)

Inside laboratory No. 2 at IBM's new nanotechnology research facility, no one can hear you scream. Once the heavy door is closed, the laboratory is essentially noise-free, insulated from electromagnetic waves and vibrations that can disrupt sensitive nanotech experiments. The lab is part of a facility due to be completed next spring that IBM will use in partnership with ETH Zurich. The company opened the doors of the facility -- still buzzing with construction work -- to journalists to show its progress.

<http://tinyurl.com/04-101112>

New Fibers And Membranes For High-Tech Textiles

(Empa, November 16, 2010)

Research and development never stops for the industrial clothing and textiles industry. It provides new raw materials, fibers, membranes as well as technological progress for numerous high-tech products. Some of those innovations were presented at Empa's yearly fall textile conference. Indeed, in the last years, impressive progress was achieved in the field of material science for textile use. The Empa textile conference displayed development currently used by the industry, as well as most recent research results and their potential.

<http://tinyurl.com/04-101116>





Aerogels For New High Performance Render

(Empa, November 18, 2010)

Empa scientists have developed a high performance render which boasts a thermal insulation value three-times better than convention render thanks to so-called aerogels. The new material offers an elegant method of renovating historic buildings to save energy without altering their appearances. Those undertaking the renovation of historical buildings are frequently faced with the challenge of how to improve the thermal insulation levels of old structures effectively yet elegantly. Aerogel possesses nanometer-sized pores and consists of 90 to 98 per cent air. These minute pores make aerogels an excellent material for use in the new insulating render, lending it a thermal conductivity value of less than 30 mW/m•K which is some two to three times better than that of conventional render.

<http://tinyurl.com/04-101118>

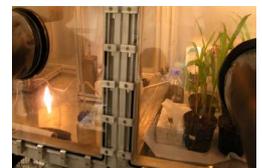


Nanoparticles And Food Plants

(ETH Zurich, November 26, 2010)

The ETH Zurich team of Professor Wendelin Stark and Detlef Günther have investigated how one of the most common food plant reacts to nanoparticle-watering and -treatment. Food plants do not stock up on nanoparticles in deeper tissues, neither do they transport them further, according to the latest research findings of the ETH Zurich and the University of Zurich. The consumer of rice and corn is therefore not at risk anymore.

<http://tinyurl.com/04-101126>

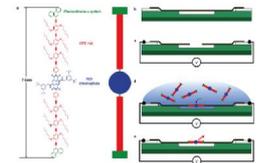


Light Emitting Single Molecules

(Nanowerk, November 29, 2010)

Future nanoelectronics engineers might be capable of using individual molecules to perform the functions in an electronic circuit that are performed by semiconductor devices today. A joint research team from Basel University and the Karlsruhe Institute of Technology in Germany has now demonstrated that rigidly wired molecules can emit light under voltage bias. This result is important for fundamental science but it also adds to the molecular electronics vision an optoelectronic component, i.e. the development of optoelectronic components on the basis of single molecules. The team synthesized a specifically designed rod-like molecule with a fluorescent core and electrodes of carbon nanotubes. These findings are reported in Nature Nanotechnology.

<http://tinyurl.com/04-101129>



5. Information & Communications Technology

Privacy-Enhancing Cryptographic Protocols

(myScience - IBM, October 07, 2010)

ACM's Special Interest Group on Security, Audit and Control has awarded its top honors to Jan Camenisch of IBM Research Zurich and to Bhavani Thuraisingham of the University of Texas at Dallas for their contributions to the computer and communications security community. Jan Camenisch receives the Outstanding Innovation Award for outstanding theoretical work on privacy-enhancing cryptographic protocols and his leadership in their practical realization. The award recognizes technical contributions to the field of computer and communication security that have had lasting impact in furthering or understanding the theory or development of secure systems.

<http://tinyurl.com/05-101007>



Computer Model To Calculate Noise Levels Along Swiss Rail Network

(Empa, October 12, 2010)

Working together with an international project team, Empa's acoustic specialists have developed a computer model which allows them to calculate noise levels along the entire Swiss rail network. The program describes how much sound is radiated and how it is attenuated. The results will show in high precision where residents are particularly exposed to noise and what abatement measures will be most effective in protecting them. The researchers are now championing the case for their noise simulation model to become the standard to be used in Switzerland, and also that it be considered in the rest of Europe too.

<http://tinyurl.com/05-101012>





Automatical Ground-Penetrating Analysis Of Road Conditions

(20 min, November 11, 2010)

Until now a ground-penetrating radar, developed by Empa, was used, but this vehicle can only drive at a very low pace and became a cause for traffic jams. A team of Swiss researchers have made further developments and invented a device to be attached to urban buses thereby gathering data on a daily bases. This project is part of the European "Istimes" plan, which foresees to combine analysis methods and provide you with a comprehensive view of road conditions.

<http://tinyurl.com/05-101011>



6. Energy / Environment

Exchanges On Flood Prevention With China

(Admin, October 04, 2010)

A meeting between Swiss and Chinese experts on flood protection and disaster relief took place at the EPFL. The main elements of the meeting included information on the incidents of flooding in China this year as well as the reconstruction efforts following the major earthquake in Wenchuan in 2009. The Swiss representatives presented modern flood protection concepts such as that in effect on the Rhone, as well as the OWARNA project being implemented in Switzerland on the optimization of warning and alert mechanisms. The meeting took place in connection with the Sino-Swiss agreement on sustainable water management and hazard prevention.

<http://tinyurl.com/06-101004>

Deforestation Of Europe

(EPFL, October 05, 2010)

Humans have transformed Europe's landscapes since the establishment of the first agricultural societies in the mid-Holocene. In this study the group of Prof. Kaplan Jed Oliver created a very high resolution, annually resolved time series of anthropogenic deforestation in Europe over the past three millennia and provide reasonable estimations of deforestation in Europe. They simulate extensive European deforestation at 1'000 BC, implying that past attempts to quantify anthropogenic perturbation of the Holocene carbon cycle may have greatly underestimated early human impact on the climate system.

<http://tinyurl.com/06-101005>



Reservoirs Emit Greenhouse Gas

(Eawag, October 11, 2010)

Substantial amounts of the greenhouse gas methane are released not only from large tropical reservoirs but also from run-of-the-river reservoirs in Switzerland, especially in the summer, when water temperatures are higher. This was demonstrated by Eawag scientists at Lake Wohlen, near Bern – a finding which slightly tarnishes the reputation of hydropower as a climate-neutral way of generating electricity. Overall, the reservoir on the Aare produces 150 tonnes of methane a year. In terms of global warming potential, it is equivalent to the carbon dioxide emissions from 25 million car kilometers,

<http://tinyurl.com/06-101011>



Community-Scale Nutrient Recovery Systems

(Eawag, October 14, 2010)

The separate collection of urine provides innovative opportunities for the improvement of sanitation and the recycling of nitrogen, phosphorus and potassium. Urine separation is an excellent sanitation solution, particularly in places where classic sewer-based sanitation is not sustainable. The Bill & Melinda Gates Foundation is providing a grant of USD 3 million to support a joint project by the Swiss Federal Institute of Aquatic Science and Technology (Eawag) and the eThekweni Water and Sanitation utility in South Africa to continue developing practical, community-scale nutrient recovery systems.

<http://tinyurl.com/06-101014>



Plants Influence Biodiversity

(Swissinfo, October 28, 2010)

The number of animal species living in a region depends upon the number of plant species, according to a study involving researchers from Bern and Zurich. This means that a decrease in the variety of flora will have a negative



effect on the fauna. As the researchers pointed out, that contradicts the idea that the predatory animals at the top of the food chain steer biodiversity. Animals that eat plants are most affected by a decrease in the variety of plants but other animals suffer as well. The biologists also found that the number of animal species does not increase when the amount of vegetation experiences a fertiliser-driven growth spurt.

<http://tinyurl.com/06-101028>

Potential Carbon Storage In The Swiss Plateau

(UNIBE, November 02, 2010)

A study from the Institute of Geology at the University of Bern showed that it may be possible to capture and store CO₂ produced by the industries in the rocks of the Swiss Plateau. Whether or not a stone is qualified for the storage of CO₂ depends on its porosity, penetrability, and fault structures. Sandstone and limestone at a depth of 800 to 2,500 meters with pores that are filled with salt water are considered the best candidates for this purpose. According to the study, the region between Fribourg, Olten and Lausanne could store up to 2,680 million tonnes of CO₂.

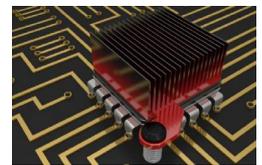
<http://tinyurl.com/06-101102>

Faster Processor Communication Speed

(EPFL, November 04, 2010)

The EPFL Service of Industrial Relations has received its 1000th invention for evaluation. Kandou, invented by the Laboratoire d'algorithmes de l'EPFL, enables processors to communicate more rapidly with their peripherals. A bus based on the Kandou system codes the signal using an astute algorithm, then transfers it over all the wires simultaneously. This invention brings multiple benefits. It requires fewer wires, the speed of signal transmission can be considerably increased and the electric intensity in the wires can be significantly reduced. All of these factors lead to energy savings.

<http://tinyurl.com/06-101104>



New Swiss Master's Course At Emirates Campus

(EPFL, November 10, 2010)

EPFL is inviting applications for the first Swiss Master's program to be offered partly outside of the country. The course in energy management and sustainability involves studies at the institute's new campus in the United Arab Emirates. The two-year Master in Energy Management and Sustainability course is scheduled to start in September 2011 at EPFL's campus. But the 2nd year of study will be carried out at the new campus in Ras Al Khaimah. The program aims to marry the research being conducted by EPFL in Lausanne with the energy needs for a harsh desert climate.

<http://tinyurl.com/06-101110>

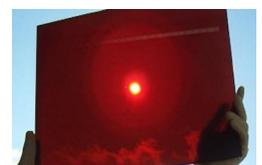


Towards Improved Solar Modules

(EPFL, November 10, 2010)

With the goal of improving the most recent solar-energy technologies, a project under the 7th Framework Program of the European Union has recently been entrusted to Oerlikon Solar. Called PEPPER, the project involves several partner institutions including EPFL's Photovoltaics and Thin Film Electronics Laboratory (PV-LAB). At the heart of this project is the concept of the micromorph tandem cell, developed and patented by PV-Lab. The advantage of this process technology is that it uses materials that are abundant and inexpensive, as it is performed on a glass substrate and in vapor phase.

<http://tinyurl.com/06-101110b>



Efficient Hybrid Solar Panels

(Meyer Burger, November 11, 2010)

The experts at 3S Swiss Solar Systems for building-integrated photovoltaics and Hansjürg Leibundgut, the well-known professor for building technology at ETH Zurich, have announced their collaboration in the field of energy optimization in buildings. Together they have developed a combination of a photo cell with a solar panel to form a "hybrid solar panel" which significantly improves the efficiency of photovoltaic installations. This collaboration has allowed 3S Swiss Solar Systems, a 100% subsidiary of Meyer Burger Technology Ltd, to extend its technical expertise as a provider of leading-edge solar systems in the field of building integration.

<http://tinyurl.com/06-101111>



New Discoveries On Blight

(myScience, November 12, 2010)

Blight affects plants and causes, along with other factors for illnesses in food plant, major crop loss. Despite several decades of research, little is known on what molecular components of the epidermal cells of plants allow for this fungus to invade the plant and which mechanisms make the plants prone to such infections. Prof. Ueli Grossniklaus's research team at Zurich University are shedding new light on plant's susceptibility to blight.

<http://tinyurl.com/06-101112>

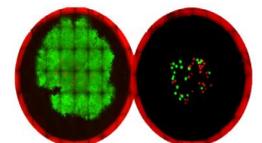


Genetic Diversity In Soil

(ETH Zurich, November 15, 2010)

The soil is the biosphere's most biologically active zone and harbors the largest reservoir of genetic diversity. In various disciplines, scientists employ models of dynamic, aquatic soil micro-habitats with innovative experiments to try to solve the question of how this diversity originates and maintained. Dani Or, Professor Institute of Terrestrial Ecology, says that the valley communities are often isolated from one another for months, especially in winter, which limits mobility and interchange. This isolation promotes the emergence of different "species" on a small landscape.

<http://tinyurl.com/06-101115>



Reduction Of Arsenic Poisoning

(myScience, November 15, 2010)

Two genes, which control the arsenic accumulation and poisoning in plant cells, have been identified. Those results come from an international collaboration between Swiss, South Korean and American laboratories as well as members of the National Centers of Competence in Research (NCCR) for Plant Survival. This discovery opens many promising perspectives for the reduction of the enrichment of arsenic in agriculture in South Asia, which is very much affected by this toxic metalloid. This study got published in the renowned PNAS journal.

<http://tinyurl.com/06-101115b>

New Way Of Environmental Reporting

(FOEN, November 17, 2010)

Swiss Environmental Domains (SwissED) is an environmental classification of the territory based on key climatic, geologic and topographic variables that influence both natural and anthropogenic processes at various scales. It constitutes a new spatial framework to analyze data about our environment (e.g. biodiversity, land cover, demography, agriculture, economic activities) that does not replace existing ones (cantons, biogeographical regions), but simply complements them.

<http://tinyurl.com/06-101117>



Swiss Photovoltaic Sector With Growth Potential

(Swissolar, November 17, 2010)

The representatives for industrial companies in the photovoltaic field gathered in Biel for the "PV-Summit". The 2010 cumulated revenue of the companies was more than CHF 2 billions. They hire several thousands of employees in Switzerland. They consider that Switzerland has a considerable growth potential in the photovoltaic sector and wishes that this potential becomes reality. They have therefore addressed a call to the federal council and the parliament.

<http://tinyurl.com/06-101117b>

Plants Impact On Biodiversity

(ETH Zurich, November 18, 2010)

The drop in the number of plant species drastically reduces the amount and the diversity of species in the food chain. These results come from one of the world's biggest biodiversity experiments, to which researchers from Zurich take part. Plants are part of the so-called lowest tropic level, and therefore have a considerable impact on biodiversity. This long-term study has been reported in "Nature".

<http://tinyurl.com/06-101118>





Pollinator Fly Changes With Climate

(UNINE, November 22, 2010)

The *Arum maculatum* is known to sequester a very specific kind of fly that help in the process of pollination. Although it was thought as an exclusive relationship, a PhD student from Neuchâtel proves different in showing that depending on the climate, the plant easily changes its 'prisoner' to optimize its reproduction. It is one of the chapters of Anahí Espíndola's thesis, which she recently defended. Moreover, this finding has been the object of a scientific publication in November in the *Oikos* journal.

<http://tinyurl.com/06-101122>



Virtual Atlas Of Switzerland

(ETH Zurich, November 26, 2010)

Within a time frame of six years, cartographers from ETH Zurich have newly developed and rebuilt the beloved and excellent "Atlas of Switzerland". Switzerland can now be explored interactively to its most hidden corner. Three new themes of transport, energy and communication are covered in this third edition.

<http://tinyurl.com/06-101126>



More Efficient Hydrogen Storage

(MyScience, November 30, 2010)

Scientists have found a way around the obstacles of storing hydrogen in bulky pressurized cylinders. Formic acid provides more efficient and safer storage of hydrogen. Once converted to formic acid, a non-flammable substance that is liquid at room temperature, hydrogen can be stored easily and safely. This is an ideal solution for storing energy from renewable sources like solar or wind power, or to power the cars of tomorrow. EPFL laboratories have now produced the opposite reaction. Through a catalytic process, the formic acid reverts to CO₂ and hydrogen, which can then be converted into electricity.

<http://tinyurl.com/06-101130>



House-Building And Energy Conference

(Energie-cluster, November 2010)

About 25'000 visitors interested in house-building and energy gathered at the last exhibition at the BEA Bern Expo to learn more about around 400 exhibitors' products and services. The Swiss House-building and Energie Exhibition 2010 gave a comprehensive insight in the modern concepts and building elements of the construction field. Highlights were successful product presentations as well as an intensive networking with interested people.

<http://tinyurl.com/06-1011>

7. Engineering / Robotics / Space

High-Precision Milling Machine Donated

(ETH Zurich, October 04, 2010)

The Institute of Machine Tools and Manufacturing at ETH Zurich can now work free of charge on the new high-precision machine Mori Seiki NMV5000 DCG worth CHF 500'000. Thanks to the Japanese firm Mori Seiki that donated the five-axe milling machine in the frame of the Machine Tool Technologies Research Foundation Loan Award, research and teaching benefit of this state-of-the-art technology to pursue ongoing projects and to pave the way for new possibilities. Until now, the award only honored four universities in Europe, namely in Belgium, Italy, Germany and Switzerland.

<http://tinyurl.com/07-101004>



Parylens Project

(L'Hebdo, October 06, 2010)

The ARC University of Applied Sciences will lead the European "Parylens" project that aims to develop new products, inspired by the crystalline lens of the eye. Examples range from lens with variable focal length to flexible screens that use the structure of flies' eyes. In the medical domain, a lens that could be implanted could be produced. While the ultimate goal is the development of better solutions for cataract patients, researchers aim to also develop innovative optical devices for cameras, biomedicine and flexible displays. With a budget of CHF 6.7 million, these research topics gather 12 partners from 8 countries, including SME, universities and research centers.

<http://tinyurl.com/07-101006>



New Discovery On Sound Wave Deflection

(EPFL, November 02, 2010)

A device developed by scientists at EPFL, based on the phenomenon of the negative refraction of sound, enables the modification of the trajectory of sound waves and allows them to move around physical obstacles. Thanks to this invention, the sound emitted by a loudspeaker can move around the pillars in a cathedral and be received intact by a person situated in their "shadow". In the same way, the noise of jet engines could be deflected towards the sky rather than the ground, and certain types of vehicles could be rendered undetectable by sonar.

<http://tinyurl.com/07-101102>

Studying Vapor Bubble Formation In Weightlessness

(EPFL, November 03, 2010)

Scientists from EPFL are conducting research on a specially quipped aircraft which enables weightlessness for a few seconds so they can model the formulation of vapor bubbles. The objective of this research is to contribute to the conception of turbines that are resistant to bubbles which are formed by the acceleration of the blades. Such tiny bubbles gradually erode the components of enormous turbines that are of several meters in diameter. The phenomenon, called cavitation, is one of the most complex and destructive problems that hydroelectricity engineers are confronted with.

<http://tinyurl.com/07-101103>



Innovation Park On Robotics

(Swisster, November 05, 2010)

A Robosphere park project is underway to showcase the latest inventions of the robotics industries at La Chaux-de-Fonds, Neuchâtel. A restaurant run by robots is just one of the plans for the park, which is scheduled to open in the Spring of 2013. Construction of the 13,000 square-meter didactic park and buildings could be launched next year. Partners include Bluebotics, a start-up from EPFL, and nano and micro technology group Neode.

<http://tinyurl.com/07-101105>



3-D Pictures Of Mars

(Swissinfo, November 13, 2010)

Bern University has been selected to contribute to a prestigious US-European mission, which will take close up 3-D pictures of Mars. The university's Space Research and Planetary Sciences Division, headed by Professor Nicolas Thomas, is to oversee construction of the telescope camera that will take the images. Swiss firms will be invited to tender for the manufacture of the parts. The purpose is to look for gas on the surface of Mars. The mission will take color stereo pictures of the surface. Having 3-D images will make it easier to look for possible landing sites, or to see where there could be methane deposits.

<http://tinyurl.com/07-101113>



ETH Zurich Analyzes Singapore's Public Transport

(ETH Zurich, November 19, 2010)

Researchers from ETH Zurich are to start analyzing Singapore's mobility and transport systems at the beginning of 2011 within the framework of the "Future Cities Laboratory". The collaboration with Singapore's transport agency was sealed last Friday. The city state is hoping for crucial pointers as to how public transport can be improved.

<http://tinyurl.com/07-101119>



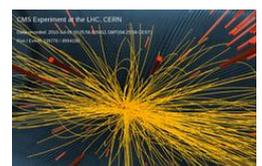
8. Physics / Chemistry / Maths

Unexpected Phenomenon In CMS Experiment At CERN

(ETH Zurich, October 23, 2010)

The CMS experiment at the Large Hadron Collider (LHC) has notched up yet another success: During the collision of proton beams with a centre-of-mass energy of 7 TeV, an unexpected phenomenon was detected with the help of the silicon pixel and strip detector. Vastly more particles were produced during the proton collisions than usual – instead of the typical 20 to 30, the researchers are talking about a hundred or more. The particle pairs produced in the process exhibited properties never before observed in proton-proton collisions.

<http://tinyurl.com/08-101023>



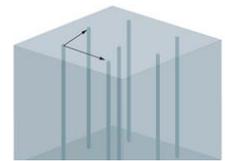


Superconductor Flux Line Pattern Depends On Direction Of Magnetic Field

(PSI, October 26, 2010)

Two physicists from the Paul Scherrer Institute and the University of Birmingham in the UK have shown that patterns formed by flux lines, which are created in superconductors when external magnetic fields that should be kept out of its interior are too strong, depend on the direction of the external magnetic field. This means it is not possible that the patterns remain always the same. Thus, there are either different patterns for different directions of the magnetic field or the flux lines are arranged in an irregular way for particular directions of the field. These results are based on a mathematical principle known as the "Hairy ball theorem".

<http://tinyurl.com/08-101026>



Self-Organization Of Functional Material

(ETH Zurich, November, 2010)

Raffaele Mezzenga, a professor for polymer physics at ETH Zurich, will be awarded with the John H. Dillon Medal in 2011 making him one of the very few non-American awardees of this prestigious prize. Mezzenga is being honored for his outstanding contributions to the field of principles of self-organization and their application in developing and monitoring of materials with selective functionalities. The Dillon Medal was established in 1983 and is being presented to persons for outstanding accomplishment and unusual promise in pioneering research in polymer physics early on in their career.

<http://tinyurl.com/08-1011a>

2010 Goals Achieved At CERN

(myScience, November 04, 2010)

The LHC at CERN has achieved all of the objectives for the first year of proton physics at a record total energy of 7 TeV. A major target for 2010 was to reach a luminosity – a measure of the collision rate – of 1032 per cm² per second. This was achieved on October 13. The LHC has since moved on to a new phase of operation, accelerating lead ions – lead atoms stripped of electrons - to bring them into collision, which enables flow of data significantly greater than proton-proton collisions.

<http://tinyurl.com/08-101104>

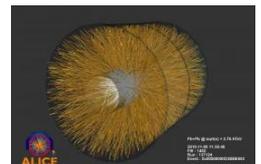


Big Bang Simulation At CERN

(Tages Anzeiger, November 10, 2010)

The collision of the much heavier lead ion particles at the Large Hadron Collider (LHC) has resulted in temperatures a million times hotter than those at the centre of the sun, and tiny quantities of matter called quark-gluon plasma which is believed to have existed microseconds after the Big Bang. From this "mini-Big Bang," the researchers hope that insights into the first microseconds of the universe.

<http://tinyurl.com/08-101110>

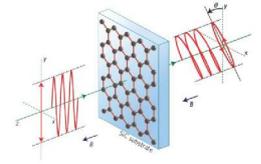


Unusual Polarization Properties Of Graphene

(Physics World, November 15, 2010)

The polarization of light can be rotated by almost 6° as it passes through a single sheet of graphene in a magnetic field, according to a team of physicists at the University of Geneva. This latest property of graphene – a sheet of carbon just one atom thick – was unexpected because large rotations normally occur only in much thicker materials. The scientists believe that this newly discovered property of graphene could be exploited in new devices that switch light using electric and magnetic fields.

<http://tinyurl.com/08-101115>



Trapping Hydrogen Antimatter At CERN

(myScience, November 17, 2010)

The ALPHA experiment at CERN has taken an important step forward in developing techniques to understand one of the Universe's open questions. Is there a difference between matter and antimatter? A study shows that it has successfully produced and trapped atoms of antihydrogen. This development opens the path to new ways of making detailed measurements of antihydrogen, which will in turn allow scientists to compare matter and antimatter.

<http://tinyurl.com/08-101117>





Quantum Process In Single Molecules

(myScience, November 24, 2010)

Prof. Dr. Stefan Willitsch, a Swiss National Science Foundation professor at the faculty of Chemistry of Basel University, has been awarded the Ruzicka-Preis. Willitsch receives this prize to fund his outstanding research in the field of individual quantum processes in single molecules. The Ruzicka prize, named after the Nobel laureate Leopold Ruzicka, is distributed since 1957 to young researchers who release outstanding work in the chemistry field.

<http://tinyurl.com/08-101124>



Physics Of Quantum Computers

(MyScience, November 25, 2010)

Professor Daniel Loss, a quantum physicist from Basel University, has been awarded with the Marcel Benoist Award 2010 from the Federal Councilor Dider Burkhalter. The prize goes to the Professor's groundbreaking work on physics of quantum computers. The quantum computer is a supercalculator that could efficiently solve problems, which today are almost unsolvable. The Marcel Benoist Award, of CHF 50'000, is considered as the most renowned science prize of Switzerland. Burkhalter recognized Loss as a pioneer and pathfinder in the development of future supercomputers.

<http://tinyurl.com/08-101125>

Birth Of The Universe Cosmic Fluid Reproduced

(Euronews, November 26, 2010)

One of the world's leading laboratories for particle physics has produced another remarkable discovery. The ATLAS project superheated the smallest atoms to temperatures at the birth of the universe, when particles were so hot they formed a primordial soup. Now, scientists at CERN in Geneva have been able to produce, measure and study this cosmic fluid for the first time. It is the latest in a line of successful experiments for CERN, after already producing temperatures hotter than the sun, and even trapping antimatter, which was once thought impossible.

<http://tinyurl.com/08-101126>

9. Architecture / Design

Four Swiss Win International Design Awards And Grand Prize

(ECAL, October 18, 2010)

Four students of Ecole Cantonale d'Art de Lausanne (ECAL) were awarded at the Belgian Design Biennale INTERIEUR, with one winning the top credit. Yanes Wühl received the grand prize for the overall best entry, which comes with a reward of 7,000 Euros that will be shared with a co-winner from Germany, and an opportunity to display his Wood stove at the 'theyoungdesignersfair'.

<http://tinyurl.com/09-101018>



Houses For Chemical Sensitive People

(Swissinfo, October 19, 2010)

A new type of accommodation made for people who are affected by Multiple Chemical Sensitivity (MCS) will be appearing near Zurich. At the beginning of 2008, around 50 people with MCS decided to create a cooperative in order to build a block of 15 flats which will be made mostly with chemical-free natural stone and a purification unit that will be installed at the entrance of every building to eliminate chemical residues. The project should be finished in 2013 in the commune of Leimbach, a location the MCS community deems favorable due to the low levels of electrosmog in the area.

<http://tinyurl.com/09-101019>



Swiss Font Exhibition At MIT

(24 Heures, November 16, 2010)

« Types We Can Make », an exhibition on Swiss fonts created at the ECAL takes place in the Compton gallery at the MIT in Boston, the city's temple of science and technology. ECAL's director, Pierre Keller, explains the extensive and very technical research lying behind the creation of new fonts. The Swiss consul in Boston, Pascal Marmier, is responsible for the promotion of this exhibition.

<http://tinyurl.com/09-101116>



Sustainable Architecture With Paradigm Shift

(ETH Zurich, November 18, 2010)

The Department of Architecture at ETH Zurich is rethinking sustainable architecture. The intention in future is to focus on CO₂ emissions during construction and operation rather than exclusively on energy consumption. Marc Angélil explains in an interview why the time is ripe for a paradigm shift in architecture.

<http://tinyurl.com/09-101118>



10. Economy, Social Sciences & Humanities

Innovation Chair For Service And Hotel Sector

(ePresse – L'AGEFI, October 01, 2010)

The Institute of Innovation and Entrepreneurship of the Ecole Hôtelière de Lausanne (INTEHL) launched the first innovation chair for the service and hotel business sector. INTEHL's goals are to foster innovation, creativity and the launching of new start-ups in the third sector. In addition, specific tools for the hotel business will be created and developed. The chair was given the name of Paul Dubrule, co-founder of the Accor hotel group.

<http://tinyurl.com/10-101001a>

History Of Mankind Explained By Natural Sciences

(SNSF, October 05, 2010)

Using methods from the field of cultural studies, the Zurich-based science historian Marianne Sommer examines how the natural sciences go about explaining the history of man. There is growing public interest in such explanations, which delve deep into the body to tell us who we are and where we come from. The SNSF has awarded Marianne Sommer the National Latsis Prize 2010 on behalf of the Latsis Foundation for her widely acknowledged interdisciplinary research which has given the study of science history a tremendous boost in Switzerland. The prize, which is worth CHF 100'000, is one of Switzerland's most prestigious and awarded to researchers of up to 40 years of age.

<http://tinyurl.com/10-101005>



Study On Religion During Middle Ages

(SNSF, October 13, 2010)

Religions have a tendency to set themselves apart from other faiths in order to safeguard their identity and position themselves. Often enough, the means to this end are derogatory. A study conducted by the National Centre of Competence in Research (NCCR) "Mediality – Historical Perspectives" examines how people went about this in the Middle Ages. In a 15th century illustration, for instance, Christians are shown mocking pagans who are holding a somewhat unusual procession.

<http://tinyurl.com/10-101013>



Older Couples Know Less About Each Other

(UNIBAS/Journal of Consumer Psychology, October 16, 2010)

Researchers from the University of Basel, the Max Planck Institute for Human Development, Stanford University and Indiana University conducted a survey to test the influence of the length of a relationship on the ability to predict a partner's preferences. In the survey, 58 younger and 20 older couples made predictions in three domains that varied in daily importance. While prediction accuracy was generally better than chance, longer relationship length correlated with lower prediction accuracy and greater overconfidence. Independent of relationship length, prediction accuracy was higher for important domains, for strong, reliable, and stereotypical preferences, and when couples were more similar.

<http://tinyurl.com/10-101016>

Research For Disney

(Swisster, October 28, 2010)

Among the 70 projects currently going on at Disney Research Zurich, a collaborative lab between the U.S. entertainment giant and ETH Zurich, one of the most exciting is a special 3D facial scanner, a tool to reproduce human features down to the details such as pores and wrinkles. The scanner is an excellent example of a technology that could be used in the future in Disney theme parks across the world to reproduce visitors' faces onto everyday surfaces, projector games and building facades. As the only Disney lab located in Europe,





the center enjoys local and international expertise at ETH Zurich, the infrastructure and quality of life in Switzerland, said Director Markus Gross who is also a professor of computer graphics at ETH Zurich.

<http://tinyurl.com/10-101028>

Physical Explanation Of Individualism

(ETH Zurich, November, 01, 2010)

3 scientists, including a professor of Sociology at ETH Zurich, created a model for opinion forming with inspiration from physics - how droplets are formed when water vapor cools. The model is based on the assumption that similar to forces between water molecules determining how droplets are formed, the distance between individuals forming the opinion determines how much interaction there will be among them and, in turn, affects the final formation of the opinion. The model also takes into account that as the number of people with similar opinions grows within a group, the tendency for individualism rises, resulting in a random fluctuation of opinions.



<http://tinyurl.com/10-101101>

11. Technology Transfer / IPR / Patents

Two Swiss Patents Awarded

(ePresse – L'AGEFI, October 01, 2010)

Special prizes have been awarded by the European Patent Office for the patents proposed by Christian Meier & Thomas Vögeli about a new “Magnetic Transport System” and by Mauro Salazar & Andre Agazzi for their work on “Nanotechnology from natural tissues: Realization of catalytic systems with high active surface from spongy bone”.

<http://tinyurl.com/11-101001a>

Swiss Technology Award For Spin-offs

(ETH Zurich, November 05, 2010)

All 3 winners of the Swiss Technology Award 2010, granted by the Swiss Economic Forum, were spin-offs of the ETH Zurich. In previous years, ETH spin-offs had been among the winners but the fact that this year, the companies Malcisbo, Optotune and HeiQ Materials won all 3 prizes in the different categories “Seed”, “Start-Up” and “Maturity Stage”, was a surprise even for ETH Zurich.



<http://tinyurl.com/12-101105>

New Incubator For Start-Ups

(Le Temps, November 17, 2010)

Below the train station, the former Pam-Valrhône goods depot is transformed into a place for the creation of Start-ups. The municipality of Sion plans on making this a crossing between research and industry, between scientists and entrepreneurs. The so-called ‘Espace Création’ will provide good conditions for the former to further convince the latter. It will offer both coaching for start-up companies as well as a facilitated access to funding.

<http://tinyurl.com/11-101117>

Swiss Federal Institute of Intellectual Property

<https://www.ige.ch/en.html>

Swiss Technology Transfer Association

<http://www.switt.ch/html/home.php>

12. General Interest

Method To Detect Cocaine In Liquids

(Swissinfo, November 02, 2010)

Researchers from the Universities of Lausanne and Geneva and university hospitals have found that simple hospital scanners are not only useful in detecting tumors and cancers in the human body, but also for uncovering cocaine dissolved in wine or other fluids. The Magnetic Resonance Imaging (MRI) machines can specifically identify cocaine in liquids. This means the cargo would not have to be opened to check the nature of the foreign substance. The method is also very fast, tracing a gram of cocaine in a minute.



<http://tinyurl.com/12-101102>



Upcoming Science and Technology Related Events

Heavy Particles at the LHC

January 5-7, 2011

<http://tinyurl.com/heavy-particles>

Physics workshop
ETH Zurich

"Watt d'Or" award

January 6, 2011

<http://tinyurl.com/watt-dor>

"Watt d'Or" award ceremony
Swiss Federal Office of Energy, Bern

How to assess building relative to earthquakes

January 11, 2011

<http://tinyurl.com/building-earthquakes>

Further education course
Empa, Dübendorf

Global Energy Basel (GEB)

January 11-12, 2011

<http://globalenergybasel.com>

First sustainable infrastructure financing summit
Congress Center, Basel

2nd day for Computer Science Teaching – Communication of sustainable knowledge

January 14, 2011

<http://www.abz.inf.ethz.ch/stiu>

Computer Science workshop
ETH Zurich

Swiss National Science Foundation - Sinergia

January 15, 2011

<http://tinyurl.com/sinergia-snsf>

Deadline for Sinergia Funding Scheme proposals

Micronarc Alpine Meeting

Equipment For Microproducts 2nd Edition

January 16-18, 2011

www.mam2011.org

Focus on equipment for manufacturing microproducts
Villars-sur-Ollon

Empa-colloquium: Controlling and using light at the nanoscale with plasmonic antennas

January 25, 2011

<http://tinyurl.com/plasmonic-antennas>

Functioning principles of plasmonic antennas
Empa, Dübendorf

Lift11: what can the future do for you?

February 2-4, 2011

<http://liftconference.com/lift11>

Current and emerging usage of digital technologies
International Conference Center, Geneva

2011 Academic Enterprise Award Europe

February 03, 2011

<http://www.sciencebusiness.net/aces>

ETH Zurich

Andreas Fuhrmann Gabrielle Hächler

Until February 3, 2011

<http://tinyurl.com/architecture-expo>

Architecture exhibition
ETH Zurich

buzzi e buzzi - 4 x 2

Until February 3, 2011

<http://tinyurl.com/buzziebuzzi>

Architecture exhibition
ETH Zurich

6th Wood energy conference

February 16, 2011

<http://tinyurl.com/wood-energy>

Debate on wood energy
Bernser Fachhochschule Architektur, Holz und Bau,
Biel

How X-Rays can support the development of MEMS

February 16-17, 2011

<http://tinyurl.com/xray-mems>

Course on MEMS development with X-rays
CSEM, Neuchâtel

Empa-colloquium: Multifunctional properties in HEUSLER compounds - from topological insula- tors to spintronics

February 22, 2011

<http://tinyurl.com/heusler>

Materials with potential for applications in electronic
devices and green energy
Empa, Dübendorf

ProDoc- the doctoral funding scheme supported by the SNSF and CRUS

March 1, 2011

<http://tinyurl.com/379sfk9>

<http://tinyurl.com/prodoc-snsfcrus>

Deadline for doctoral funding scheme ProDoc

Smart Materials in Robotics and Microtechnology

March 3-4, 2011

<http://tinyurl.com/fsrm-robotics>

A comparison of the different active materials reveal-
ing advantages and limitations of each technology
FSRM, Neuchâtel



International Motor Show

March 3-13, 2011

<http://www.salon-auto.ch/en/>

Car and accessories exhibition
Palexpo, Geneva

Red Conference

March 7-10, 2010

<http://www.red-conference.ch>

Rethinking Education in the Knowledge Society
Monte Verità, Ascona

Hermetic Packaging Design of MEMS

March 7-8, 2011

<http://tinyurl.com/fsrm-mems>

Evaluation of wafer level bonding techniques and gas
sources of different materials used in MEMS
EPFL, Lausanne

First Swiss Minergie Expo 2011

March 10-13, 2011

<http://tinyurl.com/minergie>

Congress on living comfort and sustainable construc-
tion
Messe, Luzern

Industrial Designs and Use of Microreactors.

March 11, 2011

<http://tinyurl.com/microreactors>

Automatic Control Laboratory talk
EPFL, Lausanne

Science-Switzerland Back Numbers

http://www.swissinnovation.org/Science-Switzerland_JunJul_2010.pdf

http://www.swissinnovation.org/Science-Switzerland_AprMay_2010.pdf

http://www.swissinnovation.org/Science-Switzerland_FebMar_2010.pdf

http://www.swissinnovation.org/Science-Switzerland_DecJan_2009-2010.pdf

http://www.swissinnovation.org/Science-Switzerland_OctNov_2009.pdf

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