



Science-Switzerland, August - September 2011

News on Swiss science, technology, education and innovation

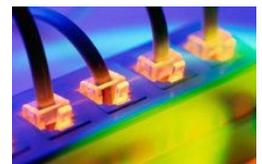
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Switzerland Remains #1 Competitive Country

(SCCIJ, September 09, 2011)

According to the most recent annual Global Competitiveness Report of the World Economic Forum, Switzerland continues to be ranked as the most competitive country in the world. Factors that put Switzerland at the top of the list include its technological capability and workforce effectiveness. Research institutions are among the best in the world, there is a high patenting rate, and support structures are transparent and well developed. The report also mentions that to maintain this leading position, university matriculation in Switzerland will have to increase.



<http://www.swissinnovation.org/articles/2011/00-110909.html>

1. Policy

CHF 200 Million Support for Technology Transfer

(Tages Anzeiger, August 31, 2011)

Due to the strong Swiss Franc and the resulting high cost of Swiss goods, many Swiss businesses and industries are suffering financially. The Swiss Federal Council is putting together a financial aid package worth 870 Million Swiss Francs, of which 212.5 Million is destined for research. The package will support technology transfer between research institutions and Swiss companies. The money will be split between the Commission for Technology and Innovation, international research programs, the two Swiss Federal Institutes of Technology, and the Swiss National Science Foundation.

<http://www.swissinnovation.org/articles/2011/01-110831.html>

Switzerland's Cleantech Masterplan

(OFFT, September 16, 2011)

The Federal Council has ratified the Cleantech Masterplan and taken several measures in the Switzerland's framework strategy for 2020 in the field of resource efficiency and sustainable energy. This Masterplan constitutes a strategic pillar of policy, not only for environment and energy, but also in the fields of economy, science, education and innovation. Results from a stakeholder consultation on the Cleantech Masterplan were also taken into account. The Plan is a coordination and communication instrument that goes beyond authorities and institutions. Apart from the measures it proposes for the Swiss government, the Plan contains more than 20 recommendations to the cantons as well as to economic and scientific circles.

<http://www.swissinnovation.org/articles/DB/www/2011/01-110916-8700.html>



2. Education

Four Swiss Universities in Shanghai Top Ranking 2011

(ShanghaiRanking Consultancy, August 14, 2011)

For the first time, four Swiss universities appear in the top 100 universities worldwide in the Shanghai Ranking 2011 published by the Shanghai Jiao Tong University. ETH Zurich, reaching the 23rd rank, is the best university of continental Europe. It ranks as high as 8th worldwide in the "Natural Sciences and Mathematics" category. In the overall ranking, the polytechnic school is followed by the universities of Zurich (56th), Geneva (73rd) and Basel (89th). The EPFL, ranked 102-150 globally, performs best in the "Engineering/Technology and Computer Sciences" category, where it reaches the 20th rank, second best university worldwide outside the USA.

<http://www.swissinnovation.org/articles/2011/02-110814.html>

Switzerland Obtains 22 ERC Starting Grants

(ERC, September 08, 2011)

The European Research Council (ERC) allocated 480 so-called Starting Grants in 2011 in order to support young researchers. ERC is the first European funding body designed to support investigator-driven frontier research through open and direct competition. Among this year's Starting Grants, 22 were given to researchers in Switzerland, which ranks the country at the 7th position. EPFL received six grants, ETH Zurich five, the University of Bern three and the University of Geneva and Zurich two each. The Universities of Basel and Lausanne, along with the Novartis research foundation, each received one Starting Grant.

<http://www.swissinnovation.org/articles/DB/www/2011/02-110908-da7c.html>

University of Lucerne's New Campus

(UNILU, September 12, 2011)

After five years of construction work, the new University of Lucerne buildings are ready for use just in time to coincide with the start of the fall semester. After a long build-up, the young university now has room to flourish in the revamped former postal service building right in the heart of Lucerne. The university's new home is located directly behind the city's Culture and Convention Centre (KKL) and on the shores of Lake Lucerne. It is a spacious building with a unique architectural design. Eleven years after the University of Lucerne was established, the new campus building provides a modern infrastructure in an ideal location, uniting the university's twenty or more disparate sites under one roof.



3. Life Science / Health Care

New Breast Cancer Diagnosis Technique

(PSI, August 02, 2011)

Researchers at the Paul Scherrer Institute have been participating in an effort to develop a new breast cancer diagnosis technique. Up until now, mammography involved measuring only X-ray attenuation. However, X-ray waves have their properties changed slightly as they pass through tissue, and the new diagnosis technique measures these changes, thereby better detecting the tissue structure in the breast. Initial tests show that the method can differentiate between scar tissue and cancerous tissue, and that it can detect much smaller cancer nodules than previously possible. The next step will be to develop a prototype that can be used in practice, and that can be used for further effectiveness testing.

<http://www.swissinnovation.org/articles/2011/03-110802.html>



Embedded Health Sensors In Shirt

(Tages Anzeiger, August 03, 2011)

The "Guardian Angels" project at EPFL is aiming to develop embedded sensors that could be sewn into clothes, monitor our health, and help us out in other ways. Sensors would also communicate with other sensors, for example warning a driver of nearby children along a road. The key technological advances needed are a reduction in power consumption of the sensors and increased efficiency in energy scavenging. The sensors would gather energy from movement, sunlight, and temperature differences, rather than from a charging station. Guardian Angels is competing for funding under the EU Flagship program, a funding scheme for ambitious programs in the field of ICT.

<http://www.swissinnovation.org/articles/2011/03-110803.html>





Improved Nuclear Medicine Blood Sampler

(CSEM, August 15, 2011)

SwissTrace and the Swiss Center for Electronics and Microtechnology (CSEM) have developed a new blood sampler, Twilite, that is adapted for use in combined Positron Emission Tomography (PET) and Nuclear Magnetic Resonance (NMR) imaging, a combination that is increasingly used for building accurate diagnoses. To be useful, the level of tracers used for PET must be tracked accurately, something which is difficult in the strong magnetic fields of a NMR scanner using traditional equipment. However, Twilite is, by design, not affected by the strong magnetic fields. It converts the tracer's signal to light and then carries the light to a sensor using liquid light guides, allowing the sensor to be placed far from the strong magnetic fields.

<http://www.swissinnovation.org/articles/2011/03-110815.html>

Discovery of Vitamin K's Enzyme Precursor

(UNINE, August 15, 2011)

A new enzyme called NDC1 that helps plants produce Vitamin K1 has been discovered. In plants, Vitamin K1 is a molecule that transfers electrons during photosynthesis. Researchers from UNINE were able to localize NDC1 in *Arabidopsis thaliana*'s plastoglobules, fatty droplets covered in enzymes and capable of stocking vitamins. NDC1's enzymatic activity was measured, and its role in the biosynthesis of vitamin K1 was discovered. The work was based on high tech chemical analysis in the field of metabolomics, the study of metabolites.

<http://www.swissinnovation.org/articles/2011/03-110815-2.html>

Gluten-Splitting Enzyme Activity in Real Time

(ETH Zurich, August 16, 2011)

Researchers from ETHZ have developed a method with which they can observe gluten-splitting enzymes in a living organism. This is an important step towards developing effective digestive proteins that can be used against gluten oversensitivity. They developed a method with which they can track the efficiency and effectiveness of enzymes known as proline-specific endopeptidases (PEPs) in the gastrointestinal tract. A short model protein was created, containing the segment of gluten, coupled with a "muting" molecule and a fluorescent dye. As soon as an enzyme had broken open the modified gluten protein, the dye was activated. The complex started to fluoresce with an intensity that varied depending on the PEP activity. By using a suitable imaging method, the researchers were eventually able to monitor the activity of the enzymes in real time.

<http://www.swissinnovation.org/articles/2011/03-110816.html>

Genetics of Butterfly Mimicry

(UNIFR, August 17, 2011)

Researchers at the University of Fribourg have discovered how certain poisonous butterflies are able to mimic each other. The genetic foundation of this ability lies in a group of genes termed a 'supergene'. It was found that three chromosomal types exist in the butterflies that lead to three distinct coloration patterns. The genes that make up the chromosome are inherited as a block, so genetic mutation is inhibited and no intermediate coloration patterns are created. Mimicry gives the butterflies an important evolutionary advantage because it confuses their predators and alerts them to the poisonous nature of the insect.

<http://www.swissinnovation.org/articles/2011/03-110817.html>



Sex Development Hormones

(UNIBE, August 18, 2011)

Scientists at the University Children's Hospitals of Bern and Zurich have been studying the complex biological processes involved in the development of male sex organs in humans. They found that there are two mechanisms for producing the hormone dihydrotestosterone (DHT), something that has only been known about in kangaroos. Because of this, the researchers were partly able to study the hormone mechanism on kangaroos, which is not invasive once the babies are in the mother's pouch. They found two possible mutations in key enzymes that can cause defective development, such that the male sex organs are underdeveloped at birth. This is normally treated with surgery, but this research may lead to other treatment methods.

<http://www.swissinnovation.org/articles/2011/03-110818.html>

Ancient Fossil Study with Swiss Light Source

(PSI, August 18, 2011)

An international team of researchers from Switzerland, China, France, and the UK used x-rays from the Swiss Light Source at the Paul Scherrer Institute to create a three-dimensional model of an ancient jawless fish fossil. With it, they were able to see the interior detail of the fossil, including nerve, vein, and artery pathways. This led them to conclude that a modern brain structure evolved before the jaw did, a key discovery in tracing evolutionary history.





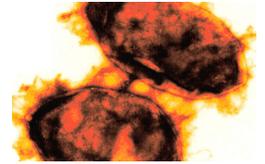
The jaw develops from stem cells that migrate from the back of the brain and down the nostrils, something that is impossible in jawless vertebrates.

<http://www.swissinnovation.org/articles/2011/03-110818-2.html>

Bacterial Transfer of DNA

(UNIBAS, August 19, 2011)

Researchers at the University of Basel have discovered that bacteria that can inject proteins into a host cell can use the same mechanism, the Type IV secretion system, to inject sequences of DNA that can then be incorporated into the host cell's nucleus. Furthermore, the research team showed that they could control the size and sequence of the injected DNA as well. This research could lead to new gene therapy methods that are more effective than virus-based methods, which cannot transfer large sequences of DNA.



<http://www.swissinnovation.org/articles/2011/03-110819.html>

New Gene Therapy for Hereditary Diseases

(UZH, August 23, 2011)

Bardet-Biedl syndrome (BBS) is a hereditary disease that causes many significant symptoms, including blindness. Researchers at the University of Zurich determined the mutation that causes the disease and then developed a therapeutic treatment method. To determine the mutation that causes BBS and blindness they took blood samples from a family that has several members with BBS, and then compared genes. Once the mutated gene was discovered, they developed a method to intervene in the defective protein production process with a harmless virus containing a working BBS gene. The method has been successfully tested on skin cells, and will next be testing on animals before being used on a human eye. The method has applications to other hereditary diseases as well.

<http://www.swissinnovation.org/articles/2011/03-110823.html>

Plant's Chemical Agent Inhibits Osteolysis

(UNIBE, August 25, 2011)

An active agent derived from *Magnolia grandiflora* inhibits bone catabolism in the human body, researchers from university of Bern have discovered. Cells that deconstruct bones, osteoclasts, have long been linked to our body's own endocannabinoid receptors. These organic molecules activate receptors on undifferentiated immune cells, which then mature to osteoclasts. If these receptors are inhibited by the chemical agent, these osteoclasts no longer develop, and the deterioration of bone cells is stopped. The aim of further research is to develop medication for osteoporosis and osteoarthritis.

<http://www.swissinnovation.org/articles/2011/03-110825.html>

Brain Improvement Through Golf Training

(UZH, August 31, 2011)

Researchers at the University of Zurich studied how golf practice can change the anatomy of the brain, specifically the structure of grey matter, in middle-aged persons. A group of adults underwent forty hours of professional or leisure time training, and the change in brain structure was measured using magnetic resonance imagery. The researchers found that practicing motor skills and hand-eye coordination helped increase grey matter. They also found that more intense training had a bigger effect than training spread out over a long period of time. This study provides support for the importance of certain leisure activities.

<http://www.swissinnovation.org/articles/2011/03-110831.html>

Cancer Profiler at Cell Level

(ETH Zurich, September 01, 2011)

A team at ETH Zurich and MIT has developed a biological computer that diagnoses cancer and subsequently treats it. The biological computer is a combination of genes that detect signals from cancerous cells and then make binary calculations. For a positive diagnosis, five signals, in the form of certain concentrations of microRNA, are required. When all the required conditions are met, the computational network kills the host cell. This process has been demonstrated in a laboratory environment, but is still far from full implementation due to the difficulty of temporarily delivering the required DNA into cells.



<http://www.swissinnovation.org/articles/2011/03-110901-2.html>

Improved Cancer Therapy

(UNIBE, September 01, 2011)

Researchers at the University of Bern, together with international partners, have developed a paradigm shifting radiological cancer therapy. Instead of using traditional agonists, they showed that antagonists are just as or even more effective at marking and reducing the size of tumors. Traditional agonists bind to cancer cells and work their



way into the cell. Conversely, antagonists bind to the cells but stay at the surface. Previously this was thought to be ineffective, but because antagonists are much better at accumulating on cancer cells they are just as effective, overall. Additionally, they have less of an effect on surrounding healthy cells, an added benefit. Further research is required to determine the breadth of the applicability of this new method.

<http://www.swissinnovation.org/articles/2011/03-110901.html>

Genetic Causes for Being Underweight

(UNIL, September 01, 2011)

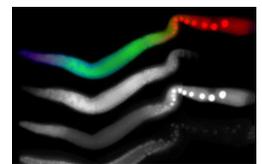
Researchers have found evidence of the cause of extreme thinness due to genetic anomaly. A region situated on the short arm of chromosome 16 is known to fluctuate in its number of copies. Most people have 2 copies of this region, but around one in 2500 has only one and one in 2000 has three copies. Researchers found last year that having only one copy can explain some cases of extreme obesity. The finding now is that people having three copies have a very low BMI and have 15-20 times more chance of being underweight than the general population. Perhaps the genes in this region regulate the sensation of satiety.

<http://www.swissinnovation.org/articles/2011/03-110901-3.html>

Control of Stem Cell Self-Renewal

(FMI, September 02, 2011)

Controlling the self-renewal and differentiation of stem cells is an important step towards stem cell therapy. Researchers at the Friedrich Miescher Institute were able to draw a direct link between the cell cycle and the fate of stem cells. Stem cells can either self-renew and produce more stem cells, or they can differentiate and specialize into any other kind of cell in the body. Which they do is controlled the cell cycle, which, in turn, is controlled by an RNA-binding protein, FBF. If the cell cycle happens fast, stem cells self-renew, but if it is slowed down, then cells differentiate.



<http://www.swissinnovation.org/articles/2011/03-110902.html>

Stomach Cancer Caused by Bacteria

(UZH, September 05, 2011)

Stomach cancer is the third most common factor in cancer-related deaths worldwide. One common cause of stomach cancer is infection with the bacteria *Helicobacter pylori*. Researchers at the University of Zurich have shown that an infection with this bacteria damages DNA strands in the stomach's mucous membrane lining. Furthermore, they showed that the intensity and duration of the infection plays a strong role in how well the DNA can be repaired. For short weak infections, DNA could be repaired almost perfectly, while for stronger and longer duration infections cells either died or had genetic mutations. This research may lead to new therapeutic methods for cancer treatment.

<http://www.swissinnovation.org/articles/2011/03-110905.html>

Inoculation with Soil Bacteria Protects Corn from Fungus, Caterpillar

(UNINE, September 06, 2011)

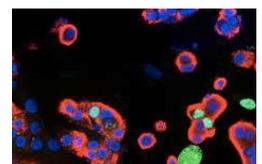
Corn plants that have been inoculated with bacteria naturally present in the soil of the *Pseudomonas* genus show a systemic resistance to the pathogenic fungus *Colletotrichum graminicola* and suffer less attacks of a certain herbivorous caterpillar. The cause of this double protection must still be elucidated, in particular by analyzing the hormonal and metabolic mechanisms activated in the plant.

<http://www.swissinnovation.org/articles/2011/03-110906.html>

Control of Insulin Producing Beta Cells

(ETH Zurich, September 07, 2011)

Researchers at ETH Zurich, together with Roche Pharmaceuticals, have discovered that the protease Bace2 controls the growth and function of beta cells, which are responsible for producing insulin in the pancreas. Bace2 functions by cleaving the protein Tmem27, which acts as a growth-promoting protein for beta cells. The researchers were able to turn off Bace2 in genetically modified mice using RNA interference, which led to increased growth of beta cells. Humans also have Bace2 protease and Tmem27 proteins in beta cells, so inhibiting Bace2 may lead to a new treatment method for diabetics.



<http://www.swissinnovation.org/articles/2011/03-110907-2.html>

Inhibition of Apoptosis Protein for Tumor Treatment

(Debiopharm Group, September 07, 2011)

Debiopharm Group a global biopharmaceutical development specialist, and Ascenta Therapeutics, Inc. a privately-held, biopharmaceutical company, have entered into an exclusive worldwide license agreement concerning the



development and commercialization of a small molecule IAP inhibitor currently in phase I development. By targeting inhibitors of apoptosis proteins, the drug can induce cancer cell death and/or potentiate the efficacy of other treatments and is expected to be effective in the treatment of various cancers in combination with anti-cancer therapies.

<http://www.swissinnovation.org/articles/2011/03-110907.html>

Multiple Genes Interact in Gene Expression

(UNIGE, September 08, 2011)

Researchers from University of Geneva have discovered that differences between individuals are not only due to genetic variation, but also due to multiple interactions in the individual's genome. They analysed the genome and the genetic expression of 120 individuals, and tracked signatures from natural selection to understand how these interactions take place in individual's genomes. Results show that the impact of rare genetic variants that alter the structure of proteins can often be attenuated or on the contrary amplified by other variants regulating the quantity of these proteins by copying the dysfunctional gene.

<http://www.swissinnovation.org/articles/2011/03-110908.html>

Genetic Origins of Narcolepsy and Other Neuropsychiatric Diseases

(UNIL, September 09, 2011)

Scientists think that most forms of narcolepsy are due to complex mechanisms, they suspect certain forms of the disease to be associated to genetic mutations. Researchers from the University of Lausanne have found a specific mutation related to narcolepsy on the gene coding for myelin oligodendrocyte glycoprotein (MOG). Although further research is necessary to identify the exact link between myelin, oligodendrocytes and narcolepsy, the study reveals the implication of MOG in other neuropsychiatric diseases, like major depression, bipolar disorder, schizophrenia, and multiple sclerosis. The genes in the oligodendrocytes are repressed, supporting the hypothesis that a dysfunction of oligodendrocytes might be at the origin of other neuro-developmental diseases.

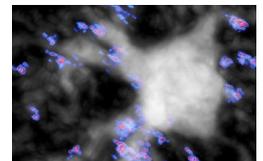
<http://www.swissinnovation.org/articles/2011/03-110909.html>

Genetic Risk Score for Hypertension

(UNIGE, September 11, 2011)

Scientists from University of Geneva have drawn interesting conclusions concerning genetic factors in relation to blood pressure. They were based on methods of investigation based on genome wide association, implicating 200'000 volunteers of European origin worldwide. In parallel studies, blood pressure was also studied with participants of African and Southeast Asian origin. After searching through thousands of genetic variants, 29 regions of the genome were identified and regrouped according to a genetic risk score for hypertension. This genetic risk score gives precious information on the consequences of arterial hypertension, such as hypertrophy of the left ventricle, stroke, and coronary disease.

<http://www.swissinnovation.org/articles/2011/03-110911.html>



New Findings on Astrocyte Functions of Neurons

(UNIL, September 12, 2011)

It was the belief that neurons and the star shaped cells among neurons called astrocytes had only a structural and metabolic support function, and that they activated only when neuronal activity was high and blood flow or nutrients needed to be locally adjusted. Scientists from University of Lausanne were able to observe local communications between neurons, observing practically a single synapse, using a technique called dynamic calcic 2 photon optical microscopy. Their study found that even the activity of single synapse generates a response in the astrocyte confined to the location of the synapse without propagating to blood vessels. When researchers blocked this activity they found that synaptic communication became less efficient. Such an intimate astrocyte participation in neuronal functioning has never before been examined.

<http://www.swissinnovation.org/articles/2011/03-110912.html>

Mental Fitness through Active Lifestyle

(UZH, September 13, 2011)

Medical and psychological research keeps finding new evidence that the health of our brain and the risk of dementia is strongly dependent on our lifestyle. New research from the University of Zurich adds evidence showing that motivational activities are also important for maintaining brain health. Categorized under "motivational activities" are setting new goals, living flexibly, and gaining an interest in new activities. For the last six years, the researchers have been studying the influence of motivational activities on cognition problems and de-





mentia. Their study shows a clear relationship between these problems and motivational activities, even when statistically controlled for other risk factors. The same correlation was seen in genetically predisposed people.

<http://www.swissinnovation.org/articles/DB/www/2011/03-110913-0de5.html>

Blood Flow Camera

(EPFL, September 14, 2011)

Dermal blood circulation is an important measurement in determining burn severity. A new device created by Aimago, a company in EPFL's Science Park, can accurately measure this using laser Doppler technology. The device shines a laser on the skin and measures the light reflected by red blood cells and the frequency shift. The device is much smaller than other devices that use similar technology, making it useful in many applications, including in the operating room when covered with a sterile sleeve. The device displays blood flow as a topographical map with different colors representing different levels of blood flow. The device may have applications to other medical fields as well.

<http://www.swissinnovation.org/articles/DB/www/2011/03-110914-244f.html>

Bird Evolution

(UZH, September 29, 2011)

Researchers from the University of Zurich have been studying the mating behavior and development of Zebra Finches. The young birds often differ qualitatively in their plumage. Until now, it was thought that these differences were due to the genetics and plumage of the father. However, new research shows that they are instead due to how early in the egg laying sequence the egg is laid. Eggs laid earlier are given more care and attention by the mother, which means more nutrients and hormones are stored in the egg, thus leading to more beautiful offspring. Finally, the scientists found that nice plumage did not attract females more, instead they postulated that sperm competition decided which eggs were fertilized by which sperm.



<http://www.swissinnovation.org/articles/DB/www/2011/03-110929-59ae.html>

Protein To Determine Cells Lifespan And Telomeres Length

(UNIGE, September 30, 2011)

Our cells lifespan is determined by elements present at chromosomes extremity, the telomeres. At each cell division, telomeres are subjected to erosion resulting in a signal of aging. Exceeding a critical level of shortening will trigger a programmed cell death process. Tumor cells, in turn, escape to this process, which is essential to understand the functioning. David Shore's team, from the University of Geneva (UNIGE), has discovered a protein that regulates telomere length and protect them. However, various kinds of cells are exempt from this control. So far, telomerase was known for interacting exclusively with telomeres, in order to lengthen them.

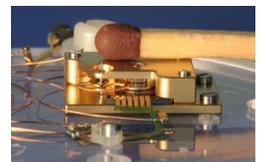
<http://www.swissinnovation.org/articles/DB/www/2011/03-110930-627e.html>

4. Nano / Micro Technology / Material Science

New Tiny Three-Phase Motor

(EPFL, August 03, 2011)

EPFL's Integrated Actuators Laboratory is developing an electromagnetic three-phase watch motor that aims to be three times more efficient than current motors using a fixed magnet and three phases instead of a single phase. The coils take up room, requiring the invention of a new configuration and geometry for the motor. Also, with three phases, the command electronics must be redesigned, because to tell time adequately, the motor must be able to locate the rotor at any point in time. However, it would be very expensive to equip the motor with sensors to do this. To solve this, the team must now find solutions from signal processing techniques that use the motor's voltage and current to measure its position.

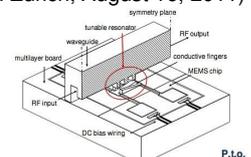


<http://www.swissinnovation.org/articles/2011/04-110803.html>

MEMS Phase Shifter For Millimeter Waves

(ETH Zurich, August 16, 2011)

Phase shifters are two-port devices that modify the transmission phase of an radio frequency (RF) signal and provide signal control. Millimeter-wave phase shifters (30 - 300 GHz) with reconfigurable characteristics are of significant importance due to the potential of integration in adaptive high data rate communication systems, sensing and imaging systems. The vast majority of existing phase shifter devices is typically discrete and based on switched trans-





mission lines using RF MEMS. The presented waveguide-mounted radio frequency MEMS phase shifter provides a large controllable variable phase shift with very low dissipated power and high levels of RF power handling for frequencies in the millimeter-wave range.

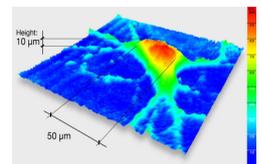
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Using Digital Holographic Microscopy to Observe Neurons

Digital Holographic Microscopy (DHM) can now be used to observe neuronal activity in real-time and in 3D—with up to 50 times greater resolution than ever before: an increase in precision from 500nm in traditional microscopes to a scale of 10nm. The application has immense potential for testing new drugs to fight neurodegenerative diseases such as Alzheimer's and Parkinson's. DHM uses a laser beam by pointing a single wavelength at an object, collecting the distorted wave on the other side, and comparing it to a reference beam. A computer then numerically reconstructs a 3D image of the object—in this case neurons. The laser beam travels through the transparent cells and important information about their internal composition is obtained.

<http://www.swissinnovation.org/articles/2011/04-110817.html>

(EPFL, August 17, 2011)

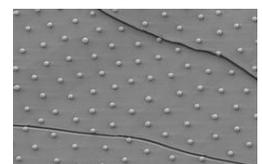


Measuring Nanoparticle Contact Angles

Scientists from ETH Zurich have developed a procedure with which they can measure the contact angle of a nanoparticle as small as 10 nm at the interface between two liquids using a purely physical procedure to measure contact angles: the so-called freeze-fracture technique, which has mainly been used by biologists. They have now extended the freeze-fracture technique to freeze nanoparticle-laden interfaces and fracture them to expose the nanoparticles. Upon fracture, the interface opens as a book and, as a result, the nanoparticles stick out from the frozen interface and leave a hollow print on the opposite side. The particles are then coated with a thin (one to three nm) metal layer at an oblique angle. The metal coating makes the nanoparticles visible in the cryogenic scanning electron microscope and then the scientists can accurately measure their size and distance between one another.

<http://www.swissinnovation.org/articles/2011/04-110831.html>

(ETHZ, August 31, 2011)



Measuring Nanoparticles with Ultracentrifugation

Measuring the size, weight, and density of nanoparticles is difficult to do in a single, simple procedure. However, researchers at EPFL have successfully applied ultracentrifugation to the problem, specifically to measuring spherical core-shell nanoparticles. In their procedure, nanoparticles are dissolved in a solution and then spun in an analytical ultracentrifuge. Two parameters are measured, the sedimentation coefficient and the particle diffusion coefficient. The first parameter measures at what moment particles separate, and the second measures how they spread through the liquid. These measurements are important for determining a host of other important characteristics about the nanoparticles. Ultracentrifugation has been around for 100 years, but was primarily used for characterizing proteins.

<http://www.swissinnovation.org/articles/2011/04-110831-2.html>

(EPFL, August 31, 2011)

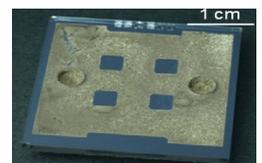


Porous Ceramic Catalysts for MEMS

Good and efficient catalyst materials are often nanosized materials available in powder form. In order to use such a catalyst in a MEMS device the nano powder needs to be bound to for example a gel or a foam. So far, no method for this exists. The patent describes a very flexible and cost-efficient method to produce a solid structured foam-type catalyst that can be filled in micro-electromechanical systems (MEMS) and nano powder catalysts produced by such a method. The performance of the catalyst is very stable over time and will enable a range of new sensor and catalysis applications.

<http://www.swissinnovation.org/articles/DB/www/2011/04-110906-197b.html>

(ETH Zurich, September 06, 2011)



"Dynamic Stencil Lithograph" Nanoscale Engineering

It may soon be possible manufacture the miniscule structures that make up transistors and silicon chips rapidly and inexpensively. EPFL scientists are currently investigating the use of dynamic stencil lithography, a recent but not yet perfected method for creating nanostructures. The technique uses a Silicon wafer or flexible plastics that is

(EPFL, September 11, 2011)



placed in an evaporator. On top of it stands a stencil with openings about 100-200 nanometers in size. During the metal evaporation, the stencil acts like a mask, and only the metal that passes through the apertures lands on the substrate. It is thus possible to locally deposit metal in a very specific pattern. Eventually, stencil lithography could thus be used in industry, replacing the traditional so-called “resist-based” nanolithography methods which are complicated and expensive processes.



<http://www.swissinnovation.org/articles/DB/www/2011/04-110911-ef11.html>

Self Healing Membranes

The pipevine (*Aristolochia macrophylla*), a liana which grows in the mountain forests of North America, has a self-healing process of stabilization rings of woody cells that heal spontaneously after suffering damage. This served as a natural example to Empa researchers that have developed a polymer foam surface coating with a closed cell construction which not only reduces the pressure loss after the membrane is damaged but also makes the inflatable structure more resistant and giving it a longer operational life. As soon as a membrane suffers damage, an additional layer provides “first aid”, thanks to its mechanical pre-tensioning, closing the hole until a proper repair can be made. Such membranes could find use, for example, in rubber dinghies or air mattresses.

(Empa, September 15, 2011)



<http://www.swissinnovation.org/articles/DB/www/2011/04-110915-fcca.html>

Enzyme for Polymerization

Polymers are large molecules that are in everyday products such as packing materials or electronics. With a few exceptions, polymers are produced with catalysts that tend to create toxic byproducts. Researchers at the University of Basel have discovered an enzyme in horseradish root that can be used to safely perform atom transfer radical polymerization (ATRP) without the usual byproducts. Enzymes are nature's version of catalysts. The researchers hope that their newly-discovered process will lead to safer alternatives to current polymers.

(UNIBAS, September 16, 2011)

<http://www.swissinnovation.org/articles/DB/www/2011/04-110916-d0e8.html>

New Innovation Center for Polytronics

The CSEM polytronics development center near Basel develops and industrializes micro- and nanotechnologies for polymer surfaces. It acts as an industry-related bridge between the academic world and industry, thereby supplementing existing activities in the region. Polytronics, also known as polymer electronics, which involves the use of electrically conducting and semi-conducting plastics and their applications, is currently at an early stage of industrialization after decades of research. An interdisciplinary technology, it combines new materials and structures with large-scale production processes involving thin layers, enabling low-cost, complex products, which are thin, light, flexible and environmentally friendly.

(CSEM, September 16, 2011)

<http://www.swissinnovation.org/articles/DB/www/2011/04-110916-5aba.html>

5. Information & Communications Technology

Lego Methodology For Communication Applications

Two laboratories within the Faculty of Communication Sciences. Università della Svizzera Italiana have developed a methodology that aids in defining requirements for online communication applications and allows for reinforcing alignment within the project team. It's called URL, as in internet address, and stands for User Requirements with Lego (the famous plastic building blocks). URL is based on Lego Serious Play, a methodology for businesses, and aims to connect the real with the virtual, to stimulate creative thinking and to consolidate corporate identity.

(USI, August 03, 2011)



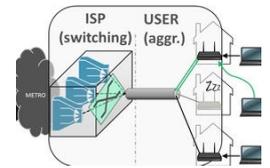
<http://www.swissinnovation.org/articles/2011/05-110803.html>



Reducing Network Energy Consumption

The energy consumed by access networks, or the networks that connect users to the Internet, makes up a large portion of the overall energy consumed by the Internet. While traffic is increasing, the energy efficiency of components such as modems, home gateways, and DSLAM multiplexers is not keeping up. Researchers at EPFL have devised several methods for reducing energy consumption. Broadband Hitch-Hiking (BH2) aggregates traffic onto fewer gateways where wireless signals overlap. For the Internet service provider, they propose inexpensive switches that batch lines onto a few DSLAM cards while letting the other ones sleep when demand is low. These technologies can reduce access network energy consumption by up to 66%.
<http://www.swissinnovation.org/articles/2011/05-110909.html>

(EPFL, September 09, 2011)



6. Energy / Environment

New Insights into Cloud Formation

Cern's CLOUD experiment has been designed to study the effect of cosmic rays on the formation of atmospheric aerosols - tiny liquid or solid particles suspended in the atmosphere that are "seeds" for cloud formation - under controlled laboratory conditions. Results show that trace vapours assumed until now to account for aerosol formation in the lower atmosphere can explain only a tiny fraction of the observed atmospheric aerosol production. The results also show that ionisation from cosmic rays significantly enhances aerosol formation. Precise measurements such as these are important in achieving a quantitative understanding of cloud formation, and will contribute to a better assessment of the effects of clouds in climate models.
<http://www.swissinnovation.org/articles/2011/06-110825.html>

(CERN, August 25, 2011)



Biodiversity and Conservation of Amoeba

Scientists from the institute of soil biology of the University of Neuchatel and the WSL have modeled the geographic distribution of amoeba. Formerly thought to be easily dispersed by the wind and therefore nearly ubiquitous, they have shown that dispersion by wind diminishes rapidly for amoeba larger than 20 micrometers. Species were identified that were clearly linked to a specific geographic area, raising the questions of studying this form of biodiversity, and the protection of rare and endangered species of microorganism.
<http://www.swissinnovation.org/articles/2011/06-110817.html>

(UNINE, August 17, 2011)

Tropical Pastureland as CO₂ Source

ETH-Zurich researchers studied CO₂ absorption and emission in Panama for different types of land use using flux measurement. Any deforestation of the rain forest and the subsequent use of the area as farm- and pastureland throws a system off balance in that, initially, much of the carbon stored in the topsoil is released. Small farmers continue to use the land as grazing land – that was thus far was assumed not to have a negative impact on the carbon footprint. However, to the astonishment of the researchers, the tropical pastureland turned out to be a "striking" source of carbon. Short-term, intensive overgrazing during the rainy season, not continuous grazing, can nullify months of carbon sequestration in a very short space of time. The grasses cannot recover sufficiently and sequester carbon during the dry season as, unlike the natural vegetation, the rainforest, they only have low root depths and therefore wither.
<http://www.swissinnovation.org/articles/2011/06-110818.html>

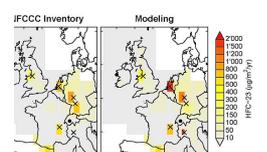
(ETHZ, August 18, 2011)



Greenhouse Gas Measurement

Fluorinated hydrocarbons are potent greenhouse gases controlled under the Kyoto Protocol. However, the Kyoto Protocol does not include any independent checks of emissions and relies on self-reported statistics. Scientists from Empa, Swiss Federal Laboratories for Materials Science and Technology were able to measure emissions from a station in the Swiss Alps and localize them based on atmospheric models. They found that actual emissions in Europe were twice as high as reported. Specifically, they found that one factory in Italy pro-

(Empa, August 18, 2011)





duced much higher emissions than reported. While this new estimation tool cannot be used to enforce the Kyoto Protocol, it could be tied into future agreements.

<http://www.swissinnovation.org/articles/2011/06-110818-2.html>

Hydrogen Storage for Fuel Cell Boat

(EMPA, August 29, 2011)

The hydrogen supply for a fuel cell on an English inland canal boat, the Ross Barlow, was provided by a hydride storage system developed by Empa. The device can store hydrogen with an energy content of 50 kWh, which is equivalent to 20 pressurized gas cylinders each of 10l capacity. The storage material consists of an alloy of titanium, zirconium, manganese, vanadium and iron in powder form, which is packed into sealed steel tubes. The powder absorbs hydrogen, thus acting as a storage medium, only releasing it when heated. Since when "filling up" with hydrogen the metal powder generates heat, which must be removed, each storage module is located in a water tank which can be warmed or cooled as necessary.



<http://www.swissinnovation.org/articles/2011/06-110829.html>

Plants Create Water Reserve Around the Roots

(PSI, September 15, 2011)

Experiments performed at the Paul Scherrer Institute (PSI) using neutron tomography reveal that a zone of higher water concentration exists around the roots of a plant. The researchers were able to create an exact three-dimensional image of the water distribution around the roots. The result obtained from this study is that the soil in a region within a few millimeters from roots contains about 30% more water than the rest of the soil. It is probable that a gel-like substance that the roots exude is responsible. This substance can absorb 10,000 times its own dry weight of water; possibly create an emergency supply for short periods of drought.



<http://www.swissinnovation.org/articles/DB/www/2011/06-110915-ac77.html>

Hybrid Solar Power Plant

(PSI, September 20, 2011)

While solar power may be a promising energy source, its main disadvantage is that it does not work when the sun is not shining. Illias Hischier, a doctoral graduate from ETH Zurich, invented a new solar receiver that can be used to drive a turbine. The receiver, consisting primarily of a porous ceramic foam, absorbs sunlight reflected from a mirror array and heats pressurized air to 1300 degrees Celsius, which can then be used to drive a turbine. When the sun isn't shining, fossil fuels can be used to heat air and drive the turbine instead. This hybrid approach combines efficiency with around-the-clock energy production.



<http://www.swissinnovation.org/articles/DB/www/2011/06-110920-bf51.html>

New Agricultural Research Center

(ETH Zurich, September 26, 2011)

The Competence Center for Agriculture and Nutrition in Strickhof, ETH Zurich and the University of Zurich will create a new education and research center in Lindau, active nationally and internationally. The doors should open in 2014. The center will host a department on livestock research and ETHZ and University of Zurich will manage a department focusing on metabolism. The new research center will involve partners from agriculture, academics, and veterinary medicine, and will work with the entire value chain following the principle "From Feed to Food". The buildings themselves will be designed sustainably, collecting rainwater, creating biogas from manure, and using a wood chip burner for heating.

<http://www.swissinnovation.org/articles/DB/www/2011/06-110926-2f6b.html>

Plant Biodiversity Stabilizes Ecosystems

(UNIBE, September 27, 2011)

Researchers from University of Bern show that high plant biodiversity is an insurance for important ecosystem functions like primary production, nutrient mineralisation or pollinisation. Long term study and analysis of the Jena grassland communities show that seemingly "superfluous" species are in reality important factors for maintaining ecosystem functionality. Maintaining the grassland's productivity over 7 years required more than twice as many different species than for a single year. Only with the maximum number of 60 species was the production target met every year. Species that were rare one year can be very important the next. Stable ecosystem functionality over time is only possible through the fluctuation of many individual species over time.

<http://www.swissinnovation.org/articles/DB/www/2011/06-110927-3eba.html>



Scenarios for Climate Change in Switzerland

(ETH Zurich, September 28, 2011)

The Center for Climate Systems Modeling (C2SM), MeteoSwiss, ETH Zurich, the NCCR Climate, and the Advisory Body on Climate Change (OcCC) collaborated intensively over several years to develop scenarios for future developments of temperature and precipitation in Switzerland. The scenarios are based on refined climate simulators and new statistical methods. Results show that average temperatures will no doubt rise during all seasons in all regions. From the middle of the century onwards summer precipitation will drop and winter precipitation rise in southern Switzerland. The new data will be used in many followup studies, and will serve as a pillar for policy making. The data is freely available in digital format.

<http://www.swissinnovation.org/articles/DB/www/2011/06-110928-f478.html>

Reef Regeneration Faster than Expected

(UZH, September 30, 2011)

At the end of the Permian period, approximately 252 million years ago, there was a mass extinction due to rapid changes in the environment. Included in this extinction were reefs, which until now were thought to have regenerated only five million years later. However, new fossil research by scientists from the University of Zurich shows that significant regeneration happened within one-and-a-half million years, and that multicellular organisms played a larger role in the process than previously thought. Organisms such as sponges and tube worms were important in rebuilding reefs once conditions had stabilized at the beginning of the Triassic period.



<http://www.swissinnovation.org/articles/DB/www/2011/06-110930-8e0a.html>

7. Engineering / Robotics / Space

Many Black Holes Hidden in Clouds

(UNIGE, August 02, 2011)

Supermassive black holes are found in the center of galaxies, with masses millions or billions of that of our Sun. When swallowing phenomenal amounts of matter, they become the most luminous sources of light in the universe, called quasars. Through very long observations with the INTEGRAL satellite, astrophysicists from the University of Geneva determined that clouds of gas and dust surround a large fraction of quasars. Like deforming mirrors, these clouds absorb and reflect light produced near black holes. X-Ray radiation measured some quasars has a peak, whose energy corresponds to the X-rays in the background radiation of the universe. The researchers conclude that this X-ray radiation is emitted by many black holes hidden in clouds.

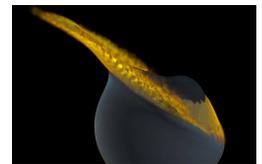


<http://www.swissinnovation.org/articles/2011/07-110802.html>

New Moon Formation Theory

(UNIBE, August 03, 2011)

Researchers at the University of Bern have proposed a new theory for the distinct differences between the two sides of the moon. The earth-facing side is relatively smooth, while the backside is characterized by high mountains and deep valleys. The new theory states that initially two moons formed around the Earth, but 100 million years after the formation of the Earth-Moon system, the two moons collided, thereby shaping the current Moon. The two moons themselves formed from a proto-lunar disk caused by the collision of the proto-Earth with another large body, a commonly accepted theory. The new study was recently published in the renowned journal "Nature".



<http://www.swissinnovation.org/articles/2011/07-110803.html>

Liquid Water on Mars Discovered

(UNIBE, August 04, 2011)

Researchers at the University of Bern, who are part of the HiRISE team on the Mars Reconnaissance Orbiter, have discovered signs of running water on Mars. Narrow channels of darkened soil have been discovered on steep slopes. The channels appear during the Martian summer near the middle latitudes and then disappear again in winter as the water evaporates. The best explanation so far is that salt-water solutions cause these channels. However, the source of the annual water supply has not been found yet, something which further observation will hopefully help reveal.



<http://www.swissinnovation.org/articles/2011/07-110804.html>



Birth of the Milky Way

Researchers at the University of Zurich and the University of California at Santa Cruz have developed the first realistic simulation of how the Milky Way galaxy formed using the principles of cold dark matter theory and other applicable physical laws. Previous simulations have been unable to produce the correct total mass and mass distribution. The simulation, which ran at the Swiss National Supercomputing Centre, showed that the galaxy started from a huge cold gas cloud with uneven mass distribution, which then expanded unevenly through supernova explosions. The same simulation has also been able to correctly simulate the formation of other galaxies, and can be used to predict the evolution of galaxies into the future.

<http://www.swissinnovation.org/articles/2011/07-110825.html>

(UZH, August 25, 2011)



50 New Exoplanets Discovered

Astronomers from the University of Geneva and the European Southern Observatory (ESO) have discovered more than 50 new exoplanets, including 16 super-Earths. Among these, one is in orbit near the boundary of the habitable zone of its star. The planets were observed using the HARPS telescope in Chile. By studying the properties of these planets, the researchers show that around 40% of stars similar to our Sun have at least one planet lighter than Saturn. Next, HARPS will be adjusted and systematically examine 10 stars similar to the Sun. The discovered planets would next be examined by next-generation space telescopes with the aim of finding signs of life by detecting chemical signatures of oxygen in their atmosphere.

<http://www.swissinnovation.org/articles/DB/www/2011/07-110912-3362.html>

(UNIGE, September 12, 2011)



Robot with Parachute

A combined team of students from ETH Zurich, the Zurich University of Applied Sciences, and the Zurich University of the Arts has developed a social robot that climbs steep facades and then parachutes back to earth on a glider-like wing. In their video, the team shows the robot climbing up a long piece of cloth draped from a high window. When it reaches the top, it pops out its parachute and lets go of the cloth.

<http://www.swissinnovation.org/articles/DB/www/2011/07-110912-4ce0.html>

(ETH Zurich, September 12, 2011)

Swiss Firm Launches Satellite

Sea Launch AG, based in Bern, provides corporate sales, marketing, contracting and management for launch services based on the Zenit-3SL launch system. The Sea Launch system offers a direct and cost-effective route to geostationary orbit for commercial communications satellites and has flown 31 missions, providing diversity of supply, affordability, flexibility and assured access to space for the industry's satellite operators. Sea Launch AG has successfully launched a 4600kg Eutelsat broadcast satellite from the Equator on the ocean-based Odyssey Launch Platform, at 154 degrees West Longitude in international waters of the Pacific Ocean.

<http://www.swissinnovation.org/articles/DB/www/2011/07-110924-8e2c.html>

(Sea Launch, September 24, 2011)



Brain Machine Interface for Car Drivers

Nissan is undertaking pioneering work in collaboration with the EPFL in order to design cars that will be able to predict its driver's next move. Research on Brain Machine Interface (BMI) systems by scientists at EPFL already allows disabled users to maneuver their wheelchairs by thought transference alone. But the levels of concentration needed are for such tasks are exceptionally high. The Nissan/EPFL collaboration is developing systems that go to the next stage using statistical analysis to predict a driver's intentions and to evaluate a driver's cognitive state relevant to the driving environment. This is done by using brain activity measurement, eye movement patterns and by scanning the environment around the car in conjunction with the car's own sensors.

<http://www.swissinnovation.org/articles/DB/www/2011/07-110928-1b1d.html>

(EPFL, September 28, 2011)



Micro-Air Vehicles Flocking Algorithm

A flock of birds suddenly taking off and flying in formation, acting like one entity, is a stunning and complex communication effort. Sabine Hauert, a PhD student at EPFL's Laboratory of Intelligent Systems technology, has

(EPFL, September 29, 2011)

adapted an algorithm that simulates individual birds communicating with their flying neighbors in order to stay in a close formation. The actual robots, developed by EPFL spin-off senseFly, communicate by creating a one-to-one wireless network in the sky—each one can then tell the distance and direction of its closest neighbors, keeping the flock together without regard for all of the robots as a group. Computer simulations at show that it is possible to flock up to 100 Micro-Air Vehicles or MAVs with this novel control algorithm.

<http://www.swissinnovation.org/articles/DB/www/2011/07-110929-2ad8.html>

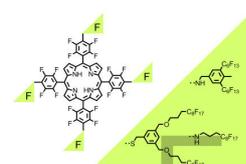
8. Physics / Chemistry / Math

Quantum Effects of Organic Molecules

(UNIBAS, August 12, 2011)

The particle-wave duality is a well-known quantum effect. Streams of particles can exhibit wave-like properties, such as interference. Researchers at the University of Basel are exploring the scale limits of this effect by performing wave interference experiments with large organic molecules. However, first they needed to find an appropriate molecule that has a high vapor pressure, is stable at high temperatures, and is easily ionized. A molecule built of fluoride groups centered around a porphyrin nucleus provided the needed properties. These molecules are some of the largest for which wave characteristics have been observed. However, the researchers want to explore the practical and fundamental limits in terms of molecule size and complexity.

<http://www.swissinnovation.org/articles/2011/03-110812.html>



New Research Facility SwissFEL

(PSI, August 23, 2011)

The Paul Scherrer Institute has chosen the final location for its new Swiss Free Electron X-Ray Laser, which will be built in Würenlingen, Aarau. The site for the 800-meter long facility had to be carefully chosen to be free from vibrations, have the correct temperatures year round, and have an adequate source of water for cooling. As part of the construction, the surrounding landscape will be improved to minimize the impact on plants, animals, and people. The new facility will enable a wide variety of research, such as studying molecular structures and chemical reactions, and will give Swiss researchers much more use time than will be available at the European XFEL.

<http://www.swissinnovation.org/articles/2011/08-110823.html>

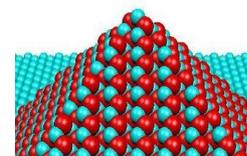


Quantum Dot Symmetry Accounts for Optical Properties

(EPFL, September 07, 2011)

Physicists have created a pyramidal quantum dot that is just under 100 nm high, about 200 atoms on a side. By applying voltage to this miniature structure, it can emit light. The physicists can deduce the optical properties of quantum dots based on symmetries that they suspect are there, and then verify the presence of the symmetries experimentally. Calculations that needed supercomputers can now be replaced by much simpler ones. Using proven observational methods, the exact symmetry of the quantum dot can be precisely deduced, as well as the properties of the electrical charge it contains and even what kind of photons it will emit. This information will be useful in designing new devices that could be used in quantum computers.

<http://www.swissinnovation.org/articles/2011/08-110907.html>



European Spallation Source with Swiss Participation

(PSI, September 19, 2011)

Switzerland has signed a European agreement to participate in the new European Spallation Source (ESS), the worldwide strongest neutron source to be built in Lund, Sweden. The Paul Scherrer Institute will lead Switzerland's participation, using its decades of experience to help design, build, and operate the facility. The ESS will complement the national neutron source, SINQ, because the ESS is a pulse beam source while the Swiss facility produces a continuous stream of neutrons. ESS will allow a range of experiments in various fields of science, from determining material properties to the movement of hydrogen in biological membranes and the inner processes of a motor.

<http://www.swissinnovation.org/articles/DB/www/2011/08-110919-af80.html>





Neutrinos Possibly Faster Than Light?

(UNIBE, September 23, 2011)

Results from the OPERA project at CERN, led by University of Bern Professor Antonio Ereditato, produced a surprising result: neutrinos may travel faster than the speed of light. However, these results, while significant, were published with great caution and with calls for independent verification. The OPERA experiment beams neutrinos, or small, uncharged particles, towards a detector in Rome to observe the transition of neutrinos from one type to another. The neutrinos were being observed to arrive 60 nanoseconds earlier than expected. The travel distance of approximately 730 km has been measured to within 10 cm, and the time to within nanoseconds. The repercussions of this finding on physics has not been fully contemplated yet.

<http://www.swissinnovation.org/articles/DB/www/2011/08-110923-9a1d.html>

9. Architecture / Design

Kinetic Microgravity Sculpture

(Architecture and Vision, September 28, 2011)

“AtlasCoelestisZeroG” is a sculpture designed for the microgravity environment in space. It draws inspiration from Galileo’s invention of the telescope over 400 years ago and its impact on our understanding of the universe. The sculpture’s gyroscopic movement represents the perpetual motion of our Solar System. Transported flat, it unfolds in microgravity with the slightest touch of a fingertip and continues rotating with the movement of ambient air. It represents an international and universal symbol of our Solar System while demonstrating the creativity of human minds and the capabilities of human technologies. The sculpture was prominently shown in the Kibo module of the space station during a special linked communication between crew members and Pope Benedict XVI.



<http://www.swissinnovation.org/articles/DB/www/2011/09-110928-8e3e.html>

10. Economy, Social Sciences & Humanities

Research to Focus On Parliament Fidelity

(UNIFR, September 07, 2011)

A research project from the University of Fribourg is interested in how politicians in Parliament respect voters will. As fall elections are approaching, the first intermediate results provide interesting data. The research project, started in 2009, will not only show whether the Council of States and the National Council represent adequately the people in their voting behavior, but also what are the institutional, economic and socio-demographic characteristics that play a role with the representatives of the voters. Switzerland is indeed offering ideal observation conditions: in the referendums, the decisions of federal parliamentarians can be compared with the decisions of the citizens of their districts, and the whole of Switzerland. The work of the research group headed by Prof. Reiner Eichenberger offers new results, representative at both Swiss and international level.



<http://www.swissinnovation.org/articles/DB/www/2011/10-110907-ab19.html>

Top Ranking for Strategy and International Management

(UNISG, September 19, 2011)

The Financial Times has placed the University of St.Gallen’s Master’s program in Strategy and International Management at the very top of its worldwide open ranking of Master’s programs in Management. The Strategy and International Management at HSG has leapt to first place from the fourth place it occupied in 2010. For Dr. Omid Aschari, Managing Director of the program, this success is “the result of the unique community spirit which inspires this program and which has been cultivated for many years.” “Together with the outstanding teaching quality, motivated students and an international practical relevance, this leads to a strong competitive position.” Prof. Dr. Günter Müller-Stewens, the program’s Academic Director, underlines the fact that “the top grades awarded by the Financial Times also honor the University of St.Gallen for its decades of efforts in management research and teaching.

<http://www.swissinnovation.org/articles/DB/www/2011/10-110919-c486.html>



11. Technology Transfer / IPR / Patents

Technology Transitioning

(Empa, September 26, 2011)

A Chinese entrepreneur, Bin Fan, is transitioning a technology he helped develop at Empa as a PhD student from the lab to industry. His new company, Weihua Solar, will be developing and producing an innovative flexible thin-film solar panel that uses a layer of salt between active layers to help increase efficiency. The main advantage of thin-film cells over rigid ones is that they don't require expensive rare metals, but are instead produced with synthetic organic dyes. Fan recently won a business competition in China under the China Greentech Initiative to help him start his company.

<http://www.swissinnovation.org/articles/DB/www/2011/11-110926-a4a6.html>



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

Swiss Solar-Powered Ship in Hong-Kong

(Tages Anzeiger, August 15, 2011)

In August, the MS Tûranor Planetsolar, the world's largest solar-powered ship, crossed the South China Sea from Subic Bay, Philippines to Hong Kong, a crossing over around 1000 kilometers. The crossing was performed under difficult conditions, including weak insolation, strong winds, and storms. The goal of the ship, which sails under the Swiss flag, is to demonstrate the power of solar power through a round the world trip completely fueled by the sun. The project was launched in 2004 in Switzerland, and the Federal Department of Foreign Affairs is one of the project partners.

<http://www.swissinnovation.org/articles/2011/12-110815.html>



13. Calls for Grants/Awards

SNSF Funding for International Short Visit Program

(SNSF, September 01, 2011)

The International Short Visits of the SNSF allow for researchers working in Switzerland to go abroad or for researchers from elsewhere to come to Switzerland. The visits can last between one week and three months. Both the visiting fellow and one person from the host institute are co-applicants of the proposal. The main aim of this funding instrument, which is open to all fields of research, is to initiate or to consolidate international collaborations. To reach this aim, short research projects between the host institute and the visiting fellow should be carried out during the stay. All relevant information on this funding instrument and on the procedure for submission of proposals can be found on the SNSF website.

<http://www.swissinnovation.org/articles/DB/www/2011/13-110901-d811.html>



Upcoming Science and Technology Related Events

ITC School Courses / Principals and Standards for Safety (in collaboration with ENSI)

October 19 – 21, 2011

<http://www.itc-school.org/>

Underground Waste Storage & Disposal
Brugg

ITC School Courses / Safety Case Development

October 24 – 26, 2011

<http://www.itc-school.org/>

Underground Waste Storage & Disposal
Brugg

GRF One Health Summit 2012

One Health - One Planet - One Future

Risks and Opportunities

February 19 – 23, 2012

<http://tinyurl.com/grf2011>

Health risk management
Congress Center Davos

RE(ACT) CONGRESS 2012

February 29 – March 2, 2012

www.react-congress.org

Research of rare and orphan diseases
Gehry Building, Novartis Campus, Basel

4th International Disaster and Risk Conference IDRC Davos 2012 "Integrative Risk Management in a Changing World"

August 26 – 30, 2012

<http://tinyurl.com/idrc2012>

Disaster/risk management
Congress Center Davos

Science-Switzerland Back Numbers

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