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Science-Switzerland, August - September 2014

News on Swiss science, technology, education and innovation

Table of Contents

Switzerland Again Tops Global Innovation Index

(Global Innovation Index, July 18, 2014)

The Global Innovation Index 2014 results were released, and Switzerland again topped the list for the fourth year in a row, followed by the United Kingdom and Sweden. The index considers both the inputs for innovation, such as institutions, human capital, and infrastructure, as well as the outputs such as patents. Other trends show the BRICS countries increasing their positions noticeably, and sub-Saharan countries becoming innovation learners through big improvements in some of the key factors.
http://swissinnovation.org/news/web/2014/00-140801-05

5 Swiss Universities Top in Shanghai Ranking

(20min, August 15, 2014)

The annually published Shanghai Ranking ranked five Swiss universities among the world's top 100 in 2014. Listed for the first time in the top 100 is the ETH Lausanne, putting Switzerland only behind the USA and Great Britain in the count for most top 100 universities. The other four Swiss Universities ranked among the top 100 are the ETH Zurich, the University of Zurich, the University of Geneva and the University of Basel. The results of the rankings which are based to a large degree on research results and publications published by the universities in the areas of natural science, engineering and medicine, highlight the quality of academic institutions in Switzerland.
http://swissinnovation.org/news/web/2014/02-140815-da

Switzerland Leads Global Competitiveness Report

(World Economic Forum, September 12, 2014)

Country	GCI 2013-2014	GCI 2014-2015	
Switzerland	1	1	→
Singapore	2	2	→
United States	5	3	↑
Finland	3	4	↓
Germany	4	5	↓
Japan	9	6	↑
Hong Kong	7	7	→
Netherlands	8	8	→
United Kingdom	10	9	↑
Sweden	6	10	↓

For the sixth time in a row Switzerland leads the top ten of the Global Competitiveness Report 2014-2015. The report assesses the competitiveness landscape of 144 economies. With ranking in the top 10 of eight pillars, Switzerland's performance is remarkably consistent. One potential threat to the country could be the difficulties of companies and research institutions in finding the right talents to preserve their remarkable capacity to innovate. As last year Switzerland is followed by Singapore. This year the third-most competitive economy in the world are the US, climbing up from the 5th place last year.
http://swissinnovation.org/news/web/2014/00-140912-0a

Swiss Universities Climb Further in QS World University Ranking 2014

(QS, September 26, 2014)

In 2014, the QS World University Ranking celebrates 10 years of existence, and its claim to be one of the three main university ranking lists. And the Swiss Universities can be proud of their continuously strong presence in the

ratings: The ETH Zurich and EPFL in 12th and 17th position respectively are the highest-ranked higher education institutions outside of the English-speaking world. The University of Zurich (57th, 21) and the University of Geneva (85th, -14) are also in the top 100. The University of Lausanne is ranked 105th (+6), the University of Basel 116th (-6), the University of Bern 145th (+9) and the University of St. Gallen between 421st and 430th place. While most Swiss institutions could hold or improve their rankings, the decrease of Geneva and Basel is not due to a decrease in their performance in the ratings, but due to the strong competition from other universities.
http://swissinnovation.org/news/web/2014/00-140926-5c

1. Policy

Switzerland Partially Back in Horizon 2020

(NZZ, September 12, 2014)

Switzerland and the EU have agreed on a partial association of Horizon 2020. Initially until the end of 2016 researchers in Switzerland can participate as partners in activities under the first pillar of Horizon 2020 called "Excellent Science". For the second and third pillar Switzerland remains a third country entity, which means that researchers can partake European projects but won't get funding from the EU. The change on the Swiss participation in Horizon 2020 was a result of the initiative against mass immigration that was accepted by the nation earlier this year.
http://swissinnovation.org/news/web/2014/01-140912-7f

Measures to Strengthen Vocational Education in Switzerland

(Federal Administration, August 27, 2014)

The Federal Council has approved a number of measures to strengthen the vocational education in Switzerland. The measures were proposed by the Federal Department of Economic Affairs, Education and Research. The main goals of the new policies are to lighten the financial burden on people taking their vocational examinations and to facilitate the access to higher education for the people who have successfully completed their apprenticeships. Furthermore, these measures will be supported by new marketing and communication efforts.
http://swissinnovation.org/news/web/2014/01-140827-62

Second Innovation Park for Switzerland Planned in Zurich

(ETH Zurich, September 05, 2014)

The Federal Council took a decision in favor of the innovation park in Dübendorf. What is now part of a military airport is to become the Zurich hub of the national Swiss Innovation Park. The Federal Council has reserved an area of about 70 hectares to this end. With this strategy, the Swiss leadership aims to establish two centers for innovation in the country: one site in the area of ETH Zurich and the other near the EPFL.
http://swissinnovation.org/news/web/2014/01-140905-cf

Swiss Pension Funds Built new Infrastructure Investment Platform

(startupticker, August 07, 2014)

Since early 2013 five of Switzerland's largest pension funds have jointly developed a tailor made investment platform, structured as an evergreen. The platform that had its first closing at $320 million but has a substantially higher target volume focuses on energy, transport, communication, and social infrastructure assets. The platform is administered by the IST Foundation and will take environmental, social, and governance concerns into account. Geographically it focuses on OECD countries and Europe and Switzerland in particular. Five representatives with a broad infrastructure investment experience form the investment committee of the fund.
http://swissinnovation.org/news/web/2014/01-140807-04

2. Education

A World's Leading Rate of Foreign Students in Switzerland

(OECD, September 19, 2014)

In 2012, more than 4.5 million students were enrolled in tertiary education outside their own country. International students make up 16% of all tertiary students in Switzerland; only Australia, Luxembourg and the United Kingdom

have a higher percentage. In Switzerland 33% of international students are enrolled in social sciences, business and law programs, followed by science at 18%, engineering, manufacturing and construction at 17%, and humanities and arts at 16%. 75% of international students are in academic tertiary programs earning a bachelor's degree, a master's degree or the equivalent and 25% are in advanced research programs. 55% of Switzerland's international students come from neighboring countries: Germany, France, Italy and Austria. Swiss choose primarily to study in Germany (22.1%), France (14.8%), the UK (13.2%) and the United States (10.3%).
http://swissinnovation.org/news/web/2014/02-140919-d0

The Challenges of Providing Online Education Worldwide

(The New York Times, August 17, 2014)

Some argue that free 'Massive Open Online Courses' (MOOCs) can help educate the world, whereas critics argue that the courses mostly draw students who already hold traditional degrees. Coursera, the largest provider of MOOCs, has undertaken an experiment using one of its online courses to teach refugees near the Kenya-Somalia border. The study highlights the challenges that MOOC providers face in trying to make sophisticated online courses work in deprived settings. Barbara Moser-Mercer, a cognitive psychologist at the University of Geneva, ran the experiment. In an article, she explained that the challenges included providing supporting technologies and infrastructure, especially internet access, overcoming cultural and linguistic barriers, and meeting certification requirements. She believes you need to build from the bottom up, and provide adequate materials and expert support.
http://swissinnovation.org/news/web/2014/02-140817-5d

Developing the Golden Triangle

(NZZ, August 28, 2014)

The high-tech cluster formed by the EPFL and its sister university the University of Lausanne is expanding to accommodate ever-increasing student numbers (more than double since 2000). Also known as the "Golden Triangle", this area forms the largest research center in Switzerland and facilitates numerous research cooperations as well as being home to many start-ups and tech companies in the medical field. Roughly CHF 1 billion has been invested to build new laboratories, hotels, student accommodation, and to develop the EPFL campus itself, of which only 25% comes from the Swiss Confederation budget and the rest from the private sector.
http://swissinnovation.org/news/web/2014/02-140828-1d

Fewer Exchange Students at Swiss Universities

(20min, September 01, 2014)

Swiss universities have been experiencing a fall in EU students enrolling for exchange programmes, with as much as a 15% decrease at the University of Basel, approximately 20% at the Universities of Luzern and Lugano, and 38% at the University of Freiburg. This is despite intense efforts to boost such programmes since the "Yes" vote for the Mass Immigration Initiative and the freezing of the EU's ERASMUS programmes. Having fewer 'ambassadors' of Swiss universities in the EU is a cause for concern according to the President of the Rector's Conference because collaboration with the EU has been crucial for a lot of scientific research. The Federal Council is working to improve such cooperation.
http://swissinnovation.org/news/web/2014/02-140901-7a

SwissSkills: The Professional Championships of Switzerland

(20min, September 22, 2014)

The first professional championships of Switzerland, SwissSkills, were an overwhelming success: The event held in Bern could attract 155'000 visitors over 5 days - more people than the total population of Bern. More than 1000 young professionals fought for the championship titles in over 70 jobs.
http://swissinnovation.org/news/web/2014/02-140922-ce

University of St. Gallen Ranks First with its SIM Master Program

(University of St. Gallen, September 15, 2014)

In 2014, for the fourth year consecutively, the Master's in Strategy and International Management (SIM) program at the University of St. Gallen (HSG) came out as number one in the Financial Times global Master of Management

Ranking. The ranking is based on diversity, value for money, quality of faculty and international exposure among others. At the University of St. Gallen, leadership capacity is developed by reaching students on an intellectual, practical as well as on an emotional level. This way, future leaders will not only be able to make profit but also to answer tomorrow's challenges in a socially responsible and ethical manner.
http://swissinnovation.org/news/web/2014/02-140915-ed

Over 600'000 Virtual Students at EPFL

(Basler Zeitung, September 24, 2014)

While the revolution in multi-massive online courses (MOOC) is driven by American universities with initiatives such as edX or Coursera Switzerland is one of the leading countries in Europe. On one hand, the ETH Zurich is participating in edX, and on the other, the EPFL is not only active in Coursera, but has also launched its own program in cooperation with several African universities. Karl Aberer, vice director of the EPFL, says that the online lectures are central for the future strategy of the university and there are plans to substantially increase these online offerings in the future.
http://swissinnovation.org/news/web/2014/02-140924-aa

3. Life Science / Health Care

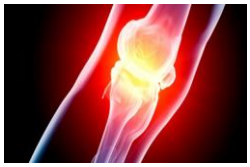
Young Fathers Contribute to Down-Syndrome Incidence

(NZZ, August 04, 2014)

Researchers at the University of Zurich's Institute for Medical Genetics have shown that in addition to old mothers, young fathers are a risk factor for Down-Syndrome incidence in children. Until now, the influence of paternal age has been difficult to determine since only 5-10% of children born with Down-Syndrome receive the third Chromosome 21 from their father. However, the number of couples in which the woman is older than the man has grown in the last 20 years. As part of their study, the researchers analyzed the ages of the parents of approximately 2 million children and divided their mothers into different age groups to compare the age of their fathers. They found that having young fathers doubled the risk compared to just having old mothers, and that the highest-risk cases consisted of both old mothers and young fathers.
http://swissinnovation.org/news/web/2014/03-140804-4d

Combating Arthritis with Armed Antibodies

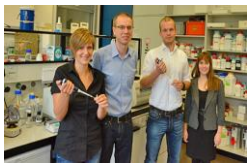
(ETH Zurich, August 06, 2014)



A new compound produced by researchers at the ETH Zurich cures mice suffering from rheumatoid arthritis and could be a new way to treat the disease in humans. Rheumatoid arthritis, an autoimmune disease that leads to painful inflammation of flexible joints, affects between 0.5 and 1% of the world's population. The results from the experiments at the ETH are the first to show what can be considered a complete cure of the condition. The compound created by the researchers is a fusion molecule that combines an antibody with the immune messenger interleukin 4. For the treatment the 'armed antibody' was injected into the mice in addition to a regular anti-inflammatory drug, dexamethasone. Clinical trials in humans are scheduled to begin next year.
http://swissinnovation.org/news/web/2014/03-140806-1e

Important Genetic Engineering Discovery

(University of Zurich, August 06, 2014)



Researchers at the University of Zurich have made an important discovery of the function of a promising molecule, Cas9. This molecule is part of the immune system, but because it cuts DNA chains, it has promising uses in genetic engineering and research as well. Protein crystallization and x-ray crystallography were heavily used to learn about the complex interactions that Cas9 undergoes. This research is a hot topic in the field and led to three publications in "Science" and "Nature" in a short period of time.
http://swissinnovation.org/news/web/2014/03-140806-94

Aberrant mTOR Signaling Impairs Whole Body Physiology

(University of Basel, August 11, 2014)

The protein mTOR is a central controller of growth and metabolism. This regulatory protein exists in two structurally and functionally distinct protein complexes called mTORC1 and mTORC2. In a recent study, researchers from the Biozentrum of the University of Basel describe how activation of mTORC1 in the liver of mice reduces not only hepatic lipid metabolism but also whole body physiology. They shed light on the underlying mechanism as well, namely that mTORC1 hyperactivation enhances the level of stress hormone FGF21 by depletion of the amino acid glutamin. These recent findings provide evidence that treatment of glutamine addicted human cancers with mTORC1 inhibitors such as rapamycin might have beneficial effects not only by blocking tumor growth but also by preventing deregulation of whole body physiology.
http://swissinnovation.org/news/web/2014/03-140811-33

Sensitive Acid Sensor Controls Insulin Production in Mice

(ETH Zurich, August 11, 2014)

ETH Zurich researchers from the Department of Biosystems Science and Engineering (D-BSSE) in Basel have developed an implantable molecular device that precisely monitors acid build-up in the body and produces insulin if blood pH values fall too low. Without the hormone insulin, blood sugar levels are not regulated, and as a consequence people with diabetes are at risk of dying from ketoacidosis. Results in mice look promising: mice with capsules implanted produced the amount of insulin appropriate to their individual acid measurements. Applications for humans are conceivable based on the prototype, but they would have to be developed in collaboration with an industrial partner.
http://swissinnovation.org/news/web/2014/03-140811-8e

Leukemia in Children with Down's Syndrome

(University of Geneva, August 11, 2014)

Children affected by trisomy 21 (Down's syndrome) are 50 to 500 times more likely to contract leukemia than other children. A group of geneticists working at the University of Geneva have investigated the genetic characteristics of Down's syndrome and sequenced the exome (part of the genome that codes for proteins) in a cohort of 39 children with Down's syndrome and leukemia. They have identified the role of RAS gene mutations in the genesis of tumors in a third of cases of acute lymphoblastic leukemia. This cancer affects children by attacking immune system cells in their bone marrow. The study also discovered that mutations in JAK2 and RAS appear to be mutually exclusive. The findings, published in Nature Communications, may help identify new treatment options.
http://swissinnovation.org/news/web/2014/03-140811-65

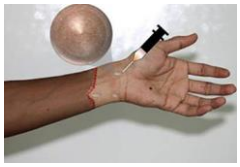
Contact Lenses for Glaucoma Diagnosis

(EPFL, August 13, 2014)

Clinical trials are currently ongoing at the University Hospital of Lausanne to test a contact lens developed by Tissot Medical Research capable of measuring internal pressure in the eye for the early detection of glaucoma. Second to cataracts, glaucoma is the most common cause of blindness worldwide and is usually only detected after irreparable damage to the optic nerve has occurred due to high pressure in the eye. With these new lenses however, intraocular pressure can be measured over 24 hours so that the development of the disease can be tracked. The lenses are made of silicone and have special 'bumps' that put pressure on the cornea when the eyelid closes, bringing two electrodes closer together. The distance between these electrodes is a measure of intraocular pressure. Researchers at EPF Lausanne played a fundamental role in the development of this product which is anticipated to be commercially available by the end of 2015.
http://swissinnovation.org/news/web/2014/03-140813-12

Hydrogel-drug Prevents Rejection of Transplanted Limbs

(Harvard Gazette, August 13, 2014)



To prevent transplant recipients' immune systems from rejecting the new body part, it is standard for them to take immunosuppressant drugs immediately. Yet the patient's vulnerability to infection rises with the suppression of the immune system, leading to higher risk of toxicities and side effects. Researchers from Switzerland, the US, and India now developed a biomaterial that self-assembles into a hydrogel, delivering the drugs locally and when needed. Pre-clinical studies showed that a on-time injection of the hydrogel-drug combination pre-

vented rejection of the transplant for over 100 days. With the new approach toxicity can be reduced while therapeutic outcomes can be improved. The innovation may not only be applied in transplant surgery but also for localized treatment of multiple inflammatory diseases.
http://swissinnovation.org/news/web/2014/03-140813-0b

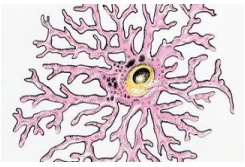
Long Antibiotic Treatments: Slowly Growing Bacteria to Blame

(University of Basel, August 15, 2014)

Until recently it was thought that dormant bacteria were the biggest issue in case of antibiotic treatment. Pathogens in a “dormancy” state survive antibiotic treatment and start only to grow when they meet more favorable conditions. Professor Bumann and his team at the University of Basel's Biozentrum however found that slowly growing bacteria can represent a bigger challenge for antibiotic treatment. With measurements based on fluorescence, they showed that slowly growing Salmonella are present in much larger numbers than dormant bacteria and they readily restart their growth once antibiotic levels in the tissue drop. A better understanding of the physiology of such slowly growing bacteria could help shorten the duration of antibiotic treatment by using a more specifically targeted antibiotic therapy.
http://swissinnovation.org/news/web/2014/03-140815-7d

Discovery of how Lactate Boosts Memory

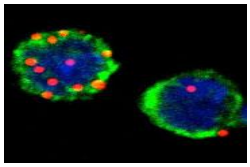
(EPFL, August 17, 2014)



Our brains are greedy, using as much as 25% of our daily energy consumption. While neurons determine how the brain operates, neighboring star-shaped cells called astrocytes also play a critical role in memory and learning. Both neurons and astrocytes thrive on glucose. EPFL researchers have decoded the mechanism by which a glucose derivative activates receptors involved in memorization. Lactate produced by the astrocytes acts as moderator of one type of glutamate receptor (NMDA receptors), the nervous system’s primary neurotransmitter. This accelerates the memorization process. The molecular mechanics of this process are explained in an article published in Proceedings of the National Academy of Sciences (PNAS). This result opens up new possibilities for treating cognitive and memory disorders, as well as psychiatric conditions such as depression.
http://swissinnovation.org/news/web/2014/03-140817-a8

Innate Lymphoid Cells Elicit T Cell Responses

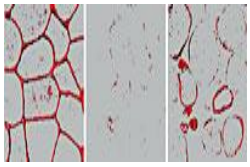
(University of Basel, August 19, 2014)



The body's immune system produces T cells to fight inflammations, but with chronic inflammation this response can get out of control, causing organ damage. New research from the University of Basel shows the importance of ILC3 lymphoid cells in promoting T cell response, in contrary to previously-held assumptions that these cells inhibited a T cell response. Specifically, ILC3 cells take up antigens and present them on their surface to T cells using MHC molecules, inciting an immune response. This knowledge could lead to new strategies for improving proper immune response and fighting excessive immune response.
http://swissinnovation.org/news/web/2014/03-140819-98

Missing Protein for Muscle Repair Restored

(University of Basel, August 21, 2014)



The protein dysferlin is eliminated by the body’s proteasome if it mutates even if its function is unaffected. Without this protein, torn muscle membranes remain unrepaired, leading to muscle loss. Now however, researchers at the University of Basel and University Hospital have been successful in restoring eliminated dysferlin in the skeletal muscles of three patients with muscular dystrophy using a proteasome inhibitor. Dysferlin levels increased after a few days, signaling a potential therapeutic effect. Future clinical trials have been planned as the researchers are hopeful that their treatment could help patients with muscular dystrophy and other incurable genetic diseases.
http://swissinnovation.org/news/web/2014/03-140821-ff

Research on Parkinson's Disease Reveals Potential Cell Therapies

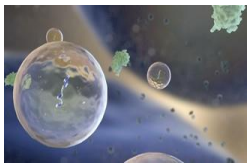
(University of Lausanne, August 18, 2014)

Research undertaken at Lausanne’s University Hospital (CHUV), in collaboration with Yale University, has been recognized and published in the online journal Global Medical Discovery. The study shows that transplants of autologous neuronal cell ecosystems in monkeys presenting symptoms of Parkinson's improve the animals’ behavior

and reduce their Parkinson's score. The related mechanisms of action have yet to be clearly defined, so they cannot yet be applied to humans. However, two approaches have been identified in the field of cell therapy: "cell replacement" whereby defective cells are replaced with new cells having the same functions, and the activation of endogenous regeneration. In cases of brain damage, new cells could directly replace destroyed cells. The first clinical trials will be conducted once authorization has been obtained from Swissmedic.
http://swissinnovation.org/news/web/2014/03-140818-81

A Better Understanding of Cell to Cell Communication

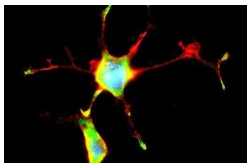
(EPFL, August 22, 2014)



Researchers at the Ecole Polytechnique Fédérale de Lausanne (EPFL) studied the release of microRNAs into exosomes. Exosomes are vesicles secreted by one cell and taken up by another one. When they contain DNA fragments or RNA, they enable horizontal transfer of genetic information between cells. MicroRNAs are small RNA molecules that can tune cell behavior by directly modulating the stability of messenger RNAs, precursors of cellular proteins. The new findings suggest that sorting of specific microRNAs into exosomes may be actively regulated and controlled by mRNA levels in the producer cell. Researchers also found that although a significant proportion of the internalized microRNAs may be degraded, remaining microRNAs retain the ability to modulate gene expression in the target cell.
http://swissinnovation.org/news/web/2014/03-140822-ca

New Signaling Pathway Found in the Nervous System

(University of Lausanne, August 22, 2014)



Researchers at the University of Lausanne have identified one of the basic mechanisms responsible for the development and proper functioning of the nervous system. Synaptic plasticity, the ability of synapses to change and adapt according to various stresses, is crucial for learning and memory processes. The intracellular signaling pathway called "Wnt" controls synapse formation and maintains synapses in the nervous systems of organisms as diverse as flies or humans. A dysfunction of this channel may cause a loss of synapses and neurodegeneration. The study, published in Development, found a new branch of the Wnt signaling pathway, preserved in neuronal cells both in flies and mammals and critical for synapse formation.
http://swissinnovation.org/news/web/2014/03-140822-50

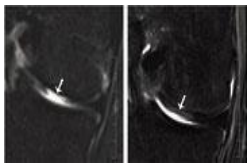
Fungi Found Flourishing at High Altitudes

(University of Lausanne, August 25, 2014)

A collaboration between the University of Lausanne, the French-speaking Graduate Institute of Occupational Health and the platform Vital-IT has discovered that, unlike plants and animals, fungal communities become more diverse at higher altitudes. The geographical distribution and ecological requirements of soil micro-organisms, and especially fungi, is not well known. A large study, published in Molecular Ecology, found that these microorganisms, invisible to the naked eye, inhabit niches. In the 205 non-forest sites explored in the Vaud Alps, the researchers found that taxonomic diversity is greater at high altitudes and is also associated with greater phylogenetic diversity. Different environmental factors (soil, climate and associated plants) also play an important role in the structuring of these fungal communities.
http://swissinnovation.org/news/web/2014/03-140825-6b

Regenerating Cartilage for Knees

(University of Basel, August 27, 2014)



Promising results to treat cartilage damage in knees are spurring further clinical trials as researchers at the University and University Hospital of Basel are optimistic that their innovative method using nasal cartilage could be an effective treatment for this common ailment. Their work exploits the regenerative properties of cartilage cells from the nose which are surprisingly compatible for the knee joint profile despite nasal cartilage cells having different origins from those of knee cartilage. By isolating cells from nasal cartilage, growing them in culture, and applying them to a scaffold to generate a graft, the researchers are then able to replace damaged knee cartilage tissue. This unique regenerative property of nasal cartilage is not lost with age, meaning that the elderly could benefit especially from this treatment in addition to those suffering from injuries and accidents.
http://swissinnovation.org/news/web/2014/03-140827-39

Silent Neurons Involved in Memory Formation

(University of Geneva, August 29, 2014)

When we learn, we associate a sensory experience with other stimuli or behavior. The neurons of the cerebral cortex transmit information to other neurons by emitting an electrical impulse. This transiently activates and modifies the synaptic connections with the other neurons involved. However, even unconnected or 'silent' neurons are affected. The results of research on memorization in silent neurons, undertaken at the University of Geneva, have been published in Nature. The study showed that a single sensory stimulus may cause long-term synaptic strengthening, even in silent neurons. The most effective stimuli to strengthen synapses come from non-secondary cortical brain regions, not major cortical pathways. This has important implications in learning and in therapy, e.g. rehabilitation after a stroke or in neurodegenerative disorders.
http://swissinnovation.org/news/web/2014/03-140829-f3

Novel blood test detects allergies

(20min, September 01, 2014)

Researchers at ETH Zurich and the University of Basel developed a novel technique to identify allergic disorders in blood. The cell-based allergy profiler scores the allergen-triggered release of histamine. In the sensor the cells start to glow when encountered with histamine. The brighter the cells glow, the stronger is the allergic reaction. For the test only a small amount of blood is needed. The technology could be a good alternative for the conventional prick test that could cause severe allergic reactions, especially for babies and people with skin diseases. But the sensor cells could also be used to facilitate other diagnostic tests.
http://swissinnovation.org/news/web/2014/03-140901-8f

Rapid Evolution in African Cichlids and Swiss Whitefish

(NZZ, September 03, 2014)

In the big African lakes, chichlids of diverse variety of colors have developed. A team of researchers from the USA and Switzerland have found that this was made possible by a huge reservoir of genetic variations. This gene-pool enables the animals to adapt to many different ecological niches. In Africa, more than 1500 species of cichlids evolved in just a few million years - and the 500 species of the Lake Victoria in just 15'000 years. That is the fastest evolution found for vertebrates so far, but a similarly rapid evolution has also been observed by various species of whitefish in the Swiss Alps.
http://swissinnovation.org/news/web/2014/03-140903-9b

EPO Found to Protect the Brains of Premature Babies

(University of Geneva, September 04, 2014)

The administration of erythropoietin (EPO) helps significantly reduce brain damage in children born before the 32nd week of pregnancy. Each year, more than 2.5 million children are born before 32 weeks. These "very premature" babies now have a good chance of survival, but they also have a higher than average risk of developing neurological disorders that may result in stunting, learning difficulties, problems with coordination, speech difficulties, a lack of attention, or hyperactivity. Research at the Geneva University Hospitals has shown that three doses of EPO, administered just after birth, can significantly reduce brain damage in these infants. The study is part of a national program to test 495 children aged 2-5 years old born in Switzerland between 2005 and 2012.
http://swissinnovation.org/news/web/2014/03-140904-86

Clinical Study Reinforces Novel Approach to Treat Multiple Sclerosis

(startupticker, September 05, 2014)

Researchers at GeNeuro SA, a pioneer of new therapies for neurology disorders, tested the monoclonal antibody GNbAC1 in ten multiple sclerosis (MS) patients in a one-year, phase IIa study. Both clinical and MRI results confirmed the safety and tolerability of GNbAC1. A proof-of-concept clinical study to test the efficacy of GNbAC1 in multiple sclerosis will follow in 2015. The usual treatment for people with MS is by way of immunosuppressive agents. GeNeuro SA, however targets MSRV-Env, a protein, which has been shown to be both pro-inflammatory and an inhibitor of remyelination, the two major drivers of MS progression. Addressing a causal factor of the disease, this future drug will radically change the way MS patients are treated.
http://swissinnovation.org/news/web/2014/03-140905-b9

Bern University Hospital Refines Deep Brain Stimulation

(swissinfo, September 07, 2014)

Deep brain stimulation uses electrodes in the brain to adjust neural activity and treat brain disorders such as Parkinson's. Implanted electrodes deliver electrical stimulation to targeted brain regions to either excite or inhibit activity in a neural circuit. A team around Neurosurgeon Claudio Pollo at Bern University Hospital now refines the procedure by using smaller and more directional electrodes. Clinical trials have shown that in so doing less current is needed and the treatment has fewer side effects. Approximately 100,000 patients worldwide have received deep brain stimulation because medication cannot adequately control their symptoms.
http://swissinnovation.org/news/web/2014/03-140907-2d

Safer Material for Diagnostic Medical Imaging

(EPFL, September 29, 2014)

A collaborative effort between EPFL, CNRS, ENS Lyon, CPE Lyon and ETH Zurich has led to the development of a novel approach that can considerably improve the capabilities of medical imaging with safer procedures for the patient. The team of scientists coordinated by Lyndon Emsley has developed a new generation of hyperpolarization agents that can be used to dramatically enhance the signal intensity of imaged body tissues without presenting any danger to the patient. The researchers have tested the efficiency of the so-called HYPSO method on several imaging markers, including pyruvate, acetate, fumarate, pure water, and a simple peptide. Because the HYPSOs is physically retained during dissolution, the technique yields pure solutions of hyperpolarized markers, free of any contaminant.
http://swissinnovation.org/news/web/2014/03-140929-f2

New Defense Mechanism Against Viruses Discovered

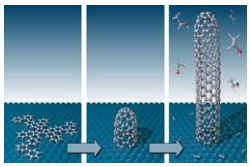
(ETH Zurich, September 11, 2014)

Researchers from ETH Zurich and the University of Bern have discovered that a known quality control mechanism in human, animal and plant cells also plays a role against viruses. This defense mechanism is the nonsense-mediated mRNA decay (NMD). The NMD system has been known for some time to eliminate incorrectly fabricated and non-functional messenger RNA molecules in cells. However, the new studies show that this system also ensures that the genome of certain RNA viruses is broken down, thereby preventing them from replicating in host cells. The underlying reason is that the RNA genome of these viruses bears certain similarities to incorrect messenger RNA molecules.
http://swissinnovation.org/news/web/2014/03-140911-e4

4. Nano / Micro Technology / Material Science

Growing Single-Wall Carbon Nanotubes

(EMPA, August 07, 2014)



For the first time, researchers at Empa and the Max Planck Institute for Solid State Research have succeeded in growing single-wall carbon nanotubes (CNTs) with a single predefined structure and hence with identical electronic properties. The CNTs assembled themselves out of tailor-made organic precursor molecules on a platinum surface. The great challenge was to find the suitable starting molecule that would "germinate" on a flat surface. Resulting CNTs could reach up to 300 nanometers. However "fully-grown" nanotubes only grow from a small portion of the germs. Now researchers are seeking to find out how the yield could be improved. In future, CNTs of this kind may be used in ultra-sensitive light detectors and ultra-small transistors.
http://swissinnovation.org/news/web/2014/04-140807-49

Ultra Thin Polymer Sheets

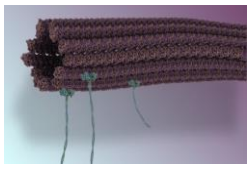
(ETH Zurich, August 13, 2014)

Researchers at ETH Zurich have been working on creating and measuring two-dimensional polymer sheets almost as thin as graphene. Until recently, polymers were only formed into one-dimensional chains of monomers. However, a new monomer structure, together with a technique to assemble the monomers, allows them to be linked in two

dimensions. Each monomer has the shape of a cylinder with wings that connect to neighboring monomers. Crystallization and UV light are used to create the bonds between them. Furthermore, x-ray crystallography was used to confirm that the polymer indeed has a two-dimensional structure.
http://swissinnovation.org/news/web/2014/04-140813-fe

Nanoscale Molecule Assembly Line

(ETH Zurich, August 26, 2014)



In the same way that cars are produced on an assembly line, researchers at the Laboratory of Applied Mechanobiology at ETH Zurich have developed an assembly line for molecules using protein polymers called microtubules. The assembly line features a nano-sized canal system three times thinner than a human hair that shuttles molecules using the motor protein kinesin. Designing the mechanical properties of protein bonds in such a way that they are able to bind the cargo to the shuttles and unload it correctly was no mean feat, requiring much creativity and interdisciplinary expertise. One step closer to fulfilling the dream of many nanoscientists, the scientists intend to optimize their system which they believe could have important applications in the modification of organic molecules like DNA, synthesis of organic polymers, and alteration of nanotubes.
http://swissinnovation.org/news/web/2014/04-140826-b3

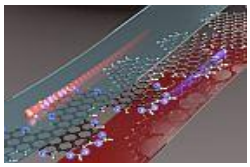
Strong Ground Protection Panels

(EMPA, August 28, 2014)

Swiss company Supramat-Swiss GmbH, together with Empa - Swiss Federal Laboratories for Materials Science and Technology, has developed ground protection panels that can be used at large outdoor events to keep mud from forming or to create temporary roads for heavy vehicles. The composite panels for festivals are made from polymer and fiberglass into one meter square panels that interlock securely without a gap for mud to seep through. They can be laid out in a large carpet. The larger panels for temporary road construction are made of multiple layers of the same material for added strength, and are also made in larger sizes.
http://swissinnovation.org/news/web/2014/04-140828-24

Doped Graphene Nanoribbons with Potential

(EMPA, September 08, 2014)



Graphene is a semiconductor when prepared as an ultra-narrow ribbon – although the material is actually a conductive material. Researchers from Empa and the Max Planck Institute for Polymer Research have now developed a new method to selectively dope graphene molecules with nitrogen atoms. By seamlessly stringing together doped and undoped graphene pieces, they were able to form ”heterojunctions” in the nanoribbons, thereby fulfilling a basic requirement for electronic current to flow in only one direction when voltage is applied – the first step towards a graphene transistor. Furthermore, the team has successfully managed to remove graphene nanoribbons from the gold substrate on which they were grown and to transfer them onto a non-conductive material.
http://swissinnovation.org/news/web/2014/04-140908-40

Salt Crystals Responsible for Ageing Buildings

(ETH Zurich, September 11, 2014)

Researchers at the Institute for Building Materials at ETH Zurich and at Princeton University tested the effects of salts on buildings under controlled conditions. There are different ways that let salt enter building materials: components of concrete contain salt, the environment can infiltrate the materials and damage can be caused by de-icing salt and seawater spray. All these factors can cause parts of the stonework to crumble away when the salts crystallizes as the liquid dries out and evaporates. The researchers found out that a greater supersaturation increases the salt’s destructive potential. So do deep temperatures. For the first time the scientists were able to describe the phenomena of salt damage in detailed physico-chemical and mechanical terms.
http://swissinnovation.org/news/web/2014/04-140911-c3

5. Information & Communications Technology

Encrypted Email Service ProtonMail Sets New Record on Indiegogo

(startupticker, August 05, 2014)

The encrypted email service ProtonMail has generated USD 550'000 on the crowdfunding platform Indiegogo. This is the highest sum raised by a software company in the technology category. The service was developed by a team of scientists working at the European Center for Nuclear Research (CERN) in Geneva, Switzerland, and at MIT in Cambridge, MA. Founded in 2013, it protects people around the world from mass surveillance. Because of end-to-end encryption, users' data is already encrypted by the time it reaches the ProtonMail servers. The company has no access to the user's messages, and since ProtonMail cannot decrypt them, the startup cannot share them with third parties. For maximum security and privacy, ProtonMail owns, runs, and operates its own hardware within secured datacenters in Switzerland.
http://swissinnovation.org/news/web/2014/05-140805-8f

Swiss-German App for Mobile Keyboards

(ETH Zurich, August 21, 2014)

Keyboards on mobile devices use a dictionary to assist with text entry. However, until now, there has been no dictionary for Swiss-German dialects, part of the challenge being the regional variation of the dialect and the lack of a standard written language. However, a student at ETH Zurich has created an app for her master thesis that provides a Swiss-German dictionary and learns new words through usage. The initial dictionary consists of about 1000 words and was created by analyzing the text from regional Facebook groups. It is available for Android devices under the name Kännsch (Swiss-German for "d'you know?").
http://swissinnovation.org/news/web/2014/05-140821-74

Cracking Encryption with Cell Phones

(EPFL, August 25, 2014)

A team at EPFL has been working on a system to crack computer encryption using a large network of cell phones. The phones work together and each solve a small part of the problem, together adding up to the large amount of computational power needed to crack the code on encrypted data. One student recounts her efforts to understand all the parts of the algorithm and make them work together across a complex network. This type of research on cryptographic systems keeps our computer networks safe by testing for weaknesses that can then be fixed.
http://swissinnovation.org/news/web/2014/05-140825-49

Potential of Social Media Overrated

(20min, August 29, 2014)

Consultancy company Roland Berger recently published a study that shows that social media has hardly no influence on customers' buying decision. Over the past years the potential of social media as a sales channel has been completely overrated. Nevertheless, it is still very important for companies to use social media. They just have to be clear on what they want to achieve with their presence in social media. Such channels could be used for example to make it easier for potential and existing customers to contact the company or inform themselves about their products.
http://swissinnovation.org/news/web/2014/05-140829-a2

Near-Real Time Tracking for the Cost of 1 SMS Per Day

(startupticker, August 07, 2014)

Swiss start-up, Kizy Tracking SA presented its innovation, K-1 GSM tracker, for the first time at Transport Logistic China 2014, the largest exhibition for logistics, mobility, IT services and supply chain management in Asia. K-1 GSM operates on the existing communication network (GSM) and thanks to its small size, enables continuous tracking of any item. Contrary to GPS based tracking systems, K-1 GSM uses minimal energy consumption, has low operating costs and is able to locate objects inside buildings and containers. The estimated cost of use is one-

tenth compared to GPS solutions on the market. It has up to 1 year battery lifetime, it weighs less than 50 grams and it is localizable in 95% of the world.
http://swissinnovation.org/news/web/2014/05-140807-de

Electronic Organ Donor Card

(swissinfo, September 01, 2014)

Switzerland has a low rate of organ donation, with 100 people dying each year due to lack of donor organs, but a new app hopes to increase awareness and make it easier for donors to notify hospitals of their status. An app, called Echo112, which was first developed to help people call for emergency services, displays directly on the home screen whether a person has agreed to be an organ donor. This feature works even if the phone is locked. The app was developed by anesthesiologist Jocelyn Corniche at the Lausanne University Hospital.
http://swissinnovation.org/news/web/2014/05-140901-24

Google Street View Climbs the Swiss Alps

(swissinfo, September 11, 2014)

To capture Switzerland's mountain hiking trails Google, the Swiss Alpine Club and Switzerland Tourism have teamed up. A wearable backpack called Trekker uses 15 cameras that create a 360° view of some remote corners of the Swiss Alps. This advancement allows the general public to explore hiking trails virtually through Google Maps and thus getting closer to Switzerland's alpine landscapes. The funding parties hope to attract more people to go on hiking trails and use the Swiss Alpine Club's mountain huts with this project.
http://swissinnovation.org/news/web/2014/05-140911-50

World Innovation Competition with Swiss Winners

(startupticker, August 29, 2014)

Two Swiss startups were winners and another two finalists in a new world innovation competition centered on Internet of Things, Machine to Machine Communication, and Wearable Technology categories. One winner was EveryCook, an app that guides novice chefs from menu selection through step-by-step preparation to a finished meal. The other winner was Limmex, which is developing an emergency watch. The watch can call pre-determined numbers and allow the user to speak through the watch.
http://swissinnovation.org/news/web/2014/05-140829-45

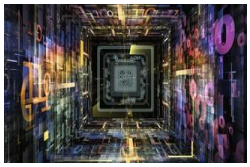
Switzerland a World Leader in Mobile Internet Usage

(20min, September 17, 2014)

Switzerland has one of the highest percentages of people who use mobile devices to access the Internet, about 80% of the population. In the younger generation, almost half use a mobile device more than a computer, but across all generations usage is increasing sharply. And, this is true for tablets as well as phones. Tablets are especially popular for those over 30 due to greater disposable income and a more friendly user interface with larger text. Among apps, WhatsApp took the lead as the most popular app, followed by Facebook.
http://swissinnovation.org/news/web/2014/05-140917-ff

European Research Effort for Ultra-Low Consumption Electronics

(EPFL, September 25, 2014)



The European project E2SWITCH is aiming to develop new electronic systems with ultra-low energy consumption. The mission of E2SWITCH will be to develop an ultra-low power electronic system based on Tunnel FET (TFET) heterostructures built on silicon substrates and exploiting a phenomenon of quantum mechanics for operating at voltages up to five times lower than those of the current standard mobile phone circuit. This is a real challenge, especially in light of the explosive growth in independent functions expected for portable devices of the future. The EPFL is coordinating this new European research project, which involves not only six universities and research institutes, but also the companies IBM, CCS and SCIPROM. The project has been funded for up to 4.3 million euros over 42 months.
http://swissinnovation.org/news/web/2014/05-140925-aa

6. Energy / Environment

Optimizing the Emergency Response to Oil Spills

(EPFL, August 08, 2014)

Newly collected data from a field experiment carried out in the North Sea sheds light on the behavior of oil in the immediate aftermath of an oil spill. The research, which was carried out in a partnership that includes researchers from the EPFL and the University of Lausanne aims to use the collected data of a small experimental spill to extrapolate onto larger spills using a computer model. Because of the sensitivity of an oil spill to external factors, such as wind and weather, no two disasters are alike. Nevertheless researchers hope that the new findings could help to optimize emergency responses as well as the assessment of the impact on humans and the environment in the case of a future accident.
http://swissinnovation.org/news/web/2014/06-140808-1d

Towards Intelligent Energy Management at BKW

(BKW, August 14, 2014)

Major Swiss energy company BKW has entered into a cooperation with Entelios AG, one of Europe's leading energy management solutions providers, in a move that will benefit its industrial and SME customers by allowing them to access the power and energy balancing markets and earn revenue from flexible power consumption and generation. Wind and photovoltaic energy generation are intermittent, and since they are becoming increasingly predominant in the energy system, the proper management of these resources has become critical. Intelligent energy management to ensure economic and reliable power-supply while working towards the Swiss government's 2050 energy goals to support renewable energy and decrease CO2 production are the main objectives of the collaboration.
http://swissinnovation.org/news/web/2014/06-140814-32

Improved High Voltage Cable

(20min, August 27, 2014)

Swiss company ABB has developed a new high voltage cable for long distance power transmission that can operate at a higher voltage and over longer distances than current technology. Additionally, it is suitable for underground or submarine installation. This new capability, which can transmit over 1500 km, is important for bringing renewable energy from the generation source to the point of use. The greater capacity and underground capability also mean that fewer lines need to be used, simplifying permitting of new projects. A new German project to bring wind energy from the North Sea to population centers is an example of a project that might benefit from this new technology.
http://swissinnovation.org/news/web/2014/06-140827-8c

Finding Solutions for Solar Energy Storage

(EPFL, September 01, 2014)

In a pilot project EPFL, Leclanché S.A., Romande Energie and the Canton of Vaud partner in order to implement a comprehensive system of energy storage. In the project scientists try to find innovative solutions to store solar energy on an industrial scale. The idea is to use high capacity and long life batteries to be able to distribute energy in an optimal way at times of peak consumption during the day. The Leclanché storage device has the size of a shipping container and will be equipped with very long lasting high performance lithium-ion titanate batteries. It will be connected to the solar cells grid installed by EPFL and Romande Energie over an area of 15000 m2.
http://swissinnovation.org/news/web/2014/06-140901-1b

Explaining Discrepancies between Climate Models and Data

(ETH Zurich, August 18, 2014)

After a drastic increase of average global temperature until the late 1990's global warming has seemingly taken a break in the last 15 years with average temperatures rising only slightly from year to year. A team surrounding ETH Climate Physics Professor Reto Knutti now believes to have figured out ways to explain the data. One factor leading to the stop in the rising of temperatures according to the researchers, are the weather phenomena El Niño and La Niña. Another factor contributing to the observed effect was determined to be lower solar activity in combination with higher aerosol concentration in the atmosphere. In addition to these factors Knutti also believes that some of

the discrepancy between predicted and measured temperature could be traced back to the way the measured data is commonly interpreted. In any case, Knutti predicts increases in average temperature will recommence in the near future.
http://swissinnovation.org/news/web/2014/06-140818-50

First Model to Explain How Mantle Plumes Crack Continents

(ETH Zurich, September 04, 2014)

Using a simulation with an unprecedentedly high resolution, Earth scientists from University of Paris VI and ETH Zurich have shown that magma columns in the Earth's interior can cause continental breakup – but only if the Earth's skin is already taut. The simulations by Evgueni Burov and Taras Gerya show that the rising flow of material forming mantle plumes is strong enough to cause continental breakup if the tectonic plate is under (weak) tensile stress. "We are the first to create such a high-resolution model which demonstrates how a plume interacts with a plate under tensile stress," says Gerya. Fast and powerful computers and stable algorithms programmed by the scientists themselves were required for the simulations.
http://swissinnovation.org/news/web/2014/06-140904-60

Efficiency Record for Creating Hydrogen with Solar Cells

(EPFL, September 26, 2014)

The race is on to optimize solar energy's performance. By combining a pair of solar cells made with a mineral called perovskite and low cost electrodes, scientists have obtained a 12.3 percent conversion efficiency from solar energy to hydrogen, a record using earth-abundant materials as opposed to rare metals. At the Laboratory of Photonics and Interfaces at EPFL, led by Michael Grätzel, where scientists invented dye solar cells that mimic photosynthesis in plants, they have also developed methods for generating fuels such as hydrogen through solar water splitting. Grätzel's post-doctoral student Jingshan Luo and his colleagues were able to obtain a device converts into hydrogen 12.3 percent of the energy diffused by the sun on perovskite absorbers. This is the first time, where hydrogen has been produced with just two solar cells, usually at least three cells are required.
http://swissinnovation.org/news/web/2014/06-140926-22

7. Engineering / Robotics / Space

Rosetta Spacecraft Arrives at Comet

(NZZ, August 06, 2014)

The spacecraft 'Rosetta' launched by the European Space Agency more than ten years ago reached its destination, the comet 67P/Churyumov-Gerasimenko, in early August. The first pictures taken from close range, which were sent back from the spacecraft to the ESA control room in Darmstadt, Germany, show a comet of irregular shape with a heterogeneous surface. On board Rosetta is the Rosina instrument developed by researchers from the University of Bern. Rosina, which combines two mass spectrometers and a pressure sensor, will measure the chemical composition of both the comet's core and it's gaseous components as well as the temperature and velocity of the comet's gas layers.
http://swissinnovation.org/news/web/2014/07-140806-40

Vulnerable and Unstable Periphery

(ETH Zurich, August 08, 2014)

ETH researchers have analyzed global air connections and found a dense network that starts to fray at the edges. This makes the regions on the periphery vulnerable to disruption, which in turn makes the entire network vulnerable as many regions are at risk of getting completely cut off from the rest of the world. The reason for this structure is that all airlines are profit-oriented, therefore they offer many connections only in areas with high passenger volumes. As for peripheries, the most economical alternative is a star-shaped network with a central hub. Airports with no alternative connections to their destinations are precisely the ones that make the world airline network most vulnerable.
http://swissinnovation.org/news/web/2014/07-140808-9a

Special Foil Protects new Tunnel From Water

(20min, August 24, 2014)

The Ceneri Base Tunnel is Switzerland's third-largest railway tunnel project. Together with the Gotthard Base Tunnel it will build the new railway connection through the Alps. To protect the tunnel tubes from water ingress a specially developed sealing foil was used. A custom-built drainage mat lets water drain off and hence reduces the pressure on the tunnel. Without the foil the pressure could lead to a collapse of the tunnel. The foil must withstand temperature differences, ground water, and rock pressure throughout some 100 years of service life of the tunnel.
http://swissinnovation.org/news/web/2014/07-140824-e4

Active Noise Reduction for Jet Engines

(EPFL, September 05, 2014)

Researchers at EPFL are working on several technologies to actively reduce the noise emitted by jet engines on aircraft. The new technology uses piezoelectric speakers to create a noise signal that cancels the noise put out by various components of the engine. The piezoelectric speakers use materials that deform slightly in response to an electrical current. One project is looking at embedding speakers in stator vanes of the fan at the front of the engine. Another one is researching how to embed speakers in the engine casing. A third is researching how jets of air can be used to quiet the noise from the engine exhaust.
http://swissinnovation.org/news/web/2014/07-140905-b4

8. Physics / Chemistry / Math

CERN, a Lab for the Whole World

(20min, September 28, 2014)

At CERN, the European Organization for Nuclear Research, physicists and engineers are probing the fundamental structure of the universe. They use the world's largest and most complex scientific instruments to study the basic constituents of matter – the fundamental particles. The particles are made to collide together at close to the speed of light. The process gives the physicists clues about how the particles interact, and provides insights into the fundamental laws of nature. Founded in 1954, the CERN laboratory sits astride the Franco-Swiss border near Geneva. It was one of Europe's first joint ventures and now has 21 member states.
http://swissinnovation.org/news/web/2014/08-140928-f3

"Nobel Prize" of Mathematics Awarded to Former Geneva Doctoral Student

(University of Geneva, August 20, 2014)

Martin Hairer, who studied at the University of Geneva, has won the Fields Medal. Awarded every four years to four mathematicians under 40 years, this is the highest international award in mathematics. Other winners were Artur Avila, director of research at CNRS, Manjul Bhargava, a professor at Princeton University, and Maryam Mirzakhani, a professor at Stanford University, the first woman to achieve this distinction. Martin Hairer, currently teaching at the University of Warwick, won the award for his outstanding contributions to the theory of stochastic analysis, used to model systems that behave randomly. The award underlines the excellence in teaching and research in mathematics and physics, and in their interaction, at the University of Geneva. Stanislav Smirnov, still teaching there, also received the Fields Medal in 2010.
http://swissinnovation.org/news/web/2014/08-140820-dd

Anomalies in Images of the Early Universe Explained

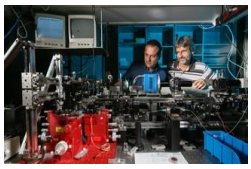
(EPFL, August 05, 2014)

The Planck Telescope, launched by the European Space Agency, allowed physicists to draw the most detailed map of the first light emitted after the Big Bang. Some of its features do not entirely fit the standard cosmological theory, so are considered anomalies. Cosmologists disagree over the source of these anomalies, particularly whether these large-scale features reveal phenomena that require new physics, or whether the information gathered by the telescope needs to be processed differently. Scientists from EPFL and CEA in France have shown that

several of these enigmatic features disappear from the map by processing Planck telescope's data differently and including other effects, such as the motion of the Milky Way. The findings are published in Cosmology and Astro-particle Physics.
http://swissinnovation.org/news/web/2014/08-140805-4a

Low-Energy Optical Circuit

(EPFL, September 08, 2014)



Researchers at EPFL have developed a very low energy photonic crystal nanostructure (PCN) which can be used in optical circuits. PCNs are the optical analog to transistors in electronic circuits in that they act as tiny switches, but they are 10 to 100 times faster. In a PCN, a photon enters and dwells in a cavity and an external light source can be used to switch the PCN between two different states. The new PCN from EPFL has a high quality factor, a measure of how long a photon dwells in the cavity, and requires very low energy to switch states.
http://swissinnovation.org/news/web/2014/08-140908-15

Experimental Proof for a Lifshitz Transition

(ETH Zurich, September 22, 2014)

In experiments using the wonder material graphene, ETH researchers have been able to demonstrate a phenomenon predicted by a Russian physicist more than 50 years ago. They analysed a layer structure that experts believe may hold unimagined promise. Anastasia Varlet, a doctoral candidate at ETH Zurich, conducted experiments on a special sandwich construction using graphene, and was able to prove the existence of a Lifshitz transition. A Lifshitz transition is a geometric transformation of an object into another by reshaping its topology. For example, a coffee cup with a handle can be reshaped into a doughnut, because both feature a hole.
http://swissinnovation.org/news/web/2014/08-140922-b7

Zurich's Falling Walls Lab

(ETH Zurich, September 24, 2014)

A three-minute time slot, three PowerPoint slides and one goal: to convince the jury of the merits of their research project. 13 young researchers from various different countries took up this challenge at the Falling Walls Lab in Zurich. An interdisciplinary jury judged the presentations on the basis of their potential to make a difference to society. Mattias Ivarsson from the Department of Chemistry and Applied Biosciences, D-CHAB (ETH Zurich) has developed a molecule which combats one of the most common hospital bugs, the bacterium C. difficile. The bacterium occurs in places where antibiotics are used and it is extremely difficult to control. Until now, C. difficile infections have been fought by administering even more antibiotics.
http://swissinnovation.org/news/web/2014/08-140924-49

9. Architecture / Design

Lausanne Gardens 2014 Takes Over a City

(swissinfo, August 08, 2014)

Lausanne Gardens is a horticultural exhibition, held every four or five years since 1997 for a period of four months. The central idea of Lausanne Gardens is to add greenery where normally there isn't any. So this summer in Lausanne some gardens seem to fall from the sky, while others bloom in spaces that were already green. There is also a neoclassic facade puffed up with grass, tufts escaping between the columns, as if plants were taking back the city. For architects and designers, this a lot more than urban decoration, it is a laboratory for research and development. When the exhibition is over, certain ideas will surely remain but it is yet too early to say which ones.
http://swissinnovation.org/news/web/2014/09-140808-0a

Full Body Flight Simulator

(startupticker, August 14, 2014)

In response to an augmented/virtual reality contest, researchers at the Zurich University of the Arts and the BirdLife Nature Center Neeracherried created Birdly, a bird flight simulator. A user lies on the simulator face down, views the environment through a head-mounted display, and uses controls that emulate the wings and feathers of a Red Kite to fly around. The simulator itself moves in response to the bird's motions.
http://swissinnovation.org/news/web/2014/09-140814-ff

10. Economy, Social Sciences & Humanities

Studying the Bitcoin Market

(ETH Zurich, August 06, 2014)

Researchers with the Chair of Systems Design held by Professor Frank Schweitzer at the ETH Zurich recently published a study on the social dynamics of the Bitcoin economy. In the study they showed significant correlations between the development of prices, the growth of the Bitcoin user base and activities on search engines and social media platforms. Studying the Bitcoin economy has become an interesting new approach to studying markets. The reason for this is manifold, but considering that every transaction executed using Bitcoins is stored in anonymized form and can be accessed by anyone, including researchers, highlights the benefits the Bitcoin market presents for research compared to the more traditional money markets.
http://swissinnovation.org/news/web/2014/10-140806-44

Origins of Human Altruism Uncovered

(University of Zurich, August 27, 2014)

In a study spearheaded by anthropologist Judith Burkart from the University of Zurich, altruistic behavior as exhibited by humans has been found to be a result of 'cooperative breeding' (when other family members besides the mother care for the young). This is contrary to the common assumption that other factors such as large brains and high social tolerance predetermine this behavioral trait. As part of the study, Burkart and coworkers developed an innovative method to examine spontaneous helping behavior in a standardized way. Their study has been published in Nature Communications. Altruism has been an important factor in the evolution of human cognition as it has set us apart from our ancestors and other primate species.
http://swissinnovation.org/news/web/2014/10-140827-4b

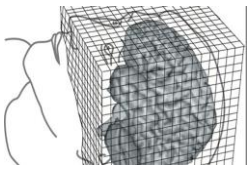
Swiss Fingerprint Expert Pierre Margot Wins US Forensic Award

(swissinfo, August 30, 2014)

This year's John A Dondero Memorial Award went to Pierre Margot, director of the School of Criminal Justice at the University of Lausanne. The scientist is one of the leading fingerprint experts in the world and has become the first non-American to be awarded the prize. The award is awarded annually by the International Association for Identification to members who have made "the most significant and valuable contribution in the area of identification and allied sciences". Pierre Margot helped to invent Polilight, the first forensic light source for the detection of fingerprints, body fluids, and other evidences.
http://swissinnovation.org/news/web/2014/10-140830-51

Difference, Where There is None

(University of Zurich, September 18, 2014)

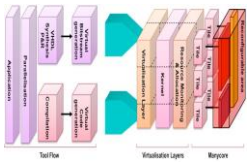


The different behavioral patterns of males and females are oft explained through neurological differences. However, a team of researchers from the University of Zurich could demonstrate in a study with 856 participants that this difference is statistically insignificant. In the study, the brain volumes and areas of the participants were investigated with imaging techniques. The team found that the average difference between the brain volumes of men and women is insignificant and within the area of 0.5 - 2% of the statistical variance.
http://swissinnovation.org/news/web/2014/10-140918-63

11. Technology Transfer / IPR / Patents

FlexTiles Many-Core Process Project Ending

(CSEM, August 12, 2014)



The FlexTiles project is nearing its end after three years. A consortium of companies, universities, and non-profits worked together to better harness the power of many-core processing units while keeping energy usage low for mobile applications. These powerful processing units will become more and more mainstream, and FlexTiles makes their use simpler by adding reconfigurable and virtualization layers on top of the processing hardware. These layers automatically allocate processing tasks to different types of processors to optimize speed, energy usage, and robustness to failure. A workshop in September brings the project to a close.
http://swissinnovation.org/news/web/2014/11-140812-e8

Medtech Startup SamanTree AG Validates First Product with Harvard Medical School

(startupticker, August 13, 2014)

SamanTree Technologies AG is a digital microscopy startup company, a spin-off of the Ecole Polytechnique Fédérale de Lausanne (EPFL). They develop digital tissue microscopy scanners with which they aim to improve the quality of tumor surgery, treatment decisions and thus overall operating room workflow. The vision is that these scanners would enable intra-operative pathological examination and therefore assure that the tumor is completely removed during operation. In the framework of the US Market Validation Camp, a new initiative of the Commission for Technology and Innovation (CTI), SamanTree Technologies AG has recently had the chance to validate its first product in development with clinical experts from Harvard Medical School and Dana Farber Cancer Institute in Boston.
http://swissinnovation.org/news/web/2014/11-140813-d0

Investor Database for Life Sciences Industry

(startupticker, August 28, 2014)

Biotechgate, a life sciences information platform, released an investor database to help match life science companies seeking funding with investors seeking opportunities. The database is searchable by investment stage, disease, or technology to help make an easy match between companies and investors. Furthermore, the database is focused on alternative investors, other than venture capital. Biotechgate was created by Venture Valuation of Zurich and is maintained in cooperation with Life Science Nation of Boston, USA.
http://swissinnovation.org/news/web/2014/11-140828-5a

CTI Swiss Medtech Award 2014: Using Ultra Sound Instead of Catheters

(Federal Administration, September 02, 2014)

In 2014, the Commission for Technology and Innovation (CTI) Swiss Medtech Award of 10 000 CHF goes to the company Veinpress GmbH. Veinpress in collaboration with ETH Zurich developed a novel method for determining central venous pressure (CVP) using ultra sound. Central venous pressure is an important medical parameter that has to be frequently measured for specific medical conditions. Currently, measurements require the insertion of a catheter which is laborious, painful for the patient and can lead to complications. The invention of Veinpress lies in measuring peripheral venous pressure which correlates well with CVP. The new method is painless, cost effective and it is free of complications.
http://swissinnovation.org/news/web/2014/11-140902-2b

Zurich's Green Taxi Initiative Wins World Economic Forum Award

(startupticker, September 16, 2014)

The World Economic Forum launched the ClimateSHAPE challenge to support today's youth to help develop and scale up projects that will have an impact on climate change. The most innovative and impactful projects were awarded 100,000 Swiss Francs in grants. Among the winning projects is the Green Taxi Initiative from Zurich. The project aims to foster the acceptance of electric mobility. It does so by introducing electric taxis in cities throughout the world. Local companies can commit to use preferential electric taxis what gives the taxi companies and drivers an incentive to join the initiative. The goal of the Green Taxi Initiative is to have 15% of all taxis in Zurich electric.
http://swissinnovation.org/news/web/2014/11-140916-9b

Swiss Top 100 Start-ups

(startupticker, September 18, 2014)

To identify the best emerging Swiss companies, startup.ch launches its annual Top 100 Startup Award, in cooperation with the Handelszeitung and Journalistenbüro Niedermann. From over 100,000 young companies, the 100 most innovative and promising Swiss start-ups are picked by experts. InSphero comes top this year. This spin-off from ETH Zurich is a leading supplier of organotypic, biological in vitro 3D microtissues for highly predictive drug testing. These microtissues are more predictive, long-lasting and affordable than conventional cell-based models. Runner-up L.E.S.S. provides a serious alternative to today's LEDs by providing their customers with ultrathin, bright, and uniform lighting systems. Runner-up Abionic, a spin-off from EPFL, uses the most advanced technology to offer the medical profession a novel point-of-care diagnostic tool designed to provide patients with personal allergy profiles.
http://swissinnovation.org/news/web/2014/11-140918-14

12. General Interest

Zurich Airport again Europe's Leading Airport

(20min, August 04, 2014)

For the eleventh time in a row travel experts and the public have awarded Zurich Airport as the leading airport in Europe. The Airport received the World Travel Award for its customer service and general quality standards of products and services. The seven competitors Zurich Airport surpassed were: Amsterdam, Barcelona, Hamburg, London-Heathrow, Lisbon, Munich and Paris-Charles de Gaulle. The World Travel Award was established in 1993 and annually recognizes outstanding achievements in the travel and tourism industry.
http://swissinnovation.org/news/web/2014/12-140804-94

Zurich Paleontologist Discovers New Dinosaur Species

(University of Zurich, August 06, 2014)

Marcelo Sanchéz, paleontologist from the University of Zurich discovered fossils of an early dinosaur species in the Andes of Venezuela. The newly discovered Laquintasaura venezuelae is grouped in the order of Ornithischia since its build is similar to today's birds. The herbivorous Ornithischia are one of two main groups of dinosaurs, the other being the Saurischia whose body is more reptile-like. The Laquintasaura venezuelae is believed to have roamed the tropical regions of South America more than 200 million years ago, which makes it one of the oldest members of the order ever to have been discovered. In addition, the location of the discovery is also a novelty, invalidating the belief held by paleontologists that the region was too harsh an environment for dinosaurs to inhabitate.
http://swissinnovation.org/news/web/2014/12-140806-d7

Newly Discovered Animal Species Named after Swiss Rainforest Advocate

(swissinfo, August 25, 2014)

Zoologists from Berne's Natural History Museum dedicated a goblin spider and the Murud black slender toad to Bruno Manser, a Swiss rainforest advocate who went missing more than 14 years ago in Borneo. Recently the activist would have celebrated his 60th birthday. All of his life Bruno Manser had been fighting against the destruction of the rain forests, especially supporting the Penan people in Borneo. He also founded a human rights and environmental fund that champions the rights of indigenous people. The scientists named the goblin spider Aposphragisma brunomanseri and the black slender toad Ansonia vidua.
http://swissinnovation.org/news/web/2014/12-140825-94

Swiss Firms Affected By Skills Shortage

(20min, August 19, 2014)

Human resources firm Manpower released its latest survey results of Swiss employers, and they show that certain skills are in high demand. The number one spot was taken by skilled laborers, followed by managers. New to the list, at position three are technicians. Reasons given for the shortage are lack of competence, lack of qualifications,

and a shortage of applicants. A majority of companies surveyed estimated that this shortage would affect customer service, competitiveness, and productivity, but they didn't have a clear strategy for solving the problem beyond developing skills internally.
http://swissinnovation.org/news/web/2014/12-140819-78

13. Calls for Grants/Awards

Call: Aspire mentorship program for female entrepreneurs

(startupticker, August 28, 2014)

Aspire is searching for 10 exceptional female entrepreneurs for its 6 month mentorship program. The program aims to empower female entrepreneurs by creating an environment that nurtures their talents. A series of personal sessions, tailored workshops, mentoring, and events will help the girls and women to increase their advancement and become leaders of tomorrow. Deadline for the Application is October 10, 2014.
http://swissinnovation.org/news/web/2014/13-140828-c7

Call for Grants: Swiss Games

(Alp ICT, September 24, 2014)

For the third time Ludicious – Zurich Game Festival, Pro Helvetia, Foundation SUISA, and swissnex San Francisco support the development of computer games in Switzerland with their "Call for Projects: Swiss Games." The organizers are looking for Swiss games that combine a high artistic standard with a high distribution potential. The laureates of the call will get grants up to 50,000 Swiss Francs, access to coaching by international experts, promotion of their products, access to an international network and much more. The most innovative game will be invited by swissnex San Francisco for a 4-week booster program. Application deadline is December 21, 2014.
http://swissinnovation.org/news/web/2014/13-140924-1f

Call: SNSF professorship

(SNSF, September 30, 2014)

The SNSF professorships address young and promising researchers who aim to pursue an academic career and start their own research team. An SNSF professorship includes the researcher's salary, a research grant, salaries of employees, as well as a contribution to infrastructure costs. The funding period is 4 years and may be extended by no more than 2 years. The submission deadline is May 1, 2015.
http://swissinnovation.org/news/web/2014/13-140131-b1

Upcoming Science and Technology Related Events

2nd International SystemsX.ch Conference
October 20-23, 2014
http://conference.systemsx.ch/welcome/
Biology
Lausanne

11th CEO Day
October 22, 2014
http://www.ceoday.ch/
Entrepreneurship
Berne

Green Toxicology
October 23, 2014
http://www.empa.ch/plugin/template/empa/22/147757/
Chemistry
Dübendorf

North America Science Day
October 27, 2014
http://www.swissnexboston.org/event/north-america-science-day/
Swiss-US science collaboration
Dübendorf / University of Zurich

SBA Academy: Regulatory Challenges in Nonclinical Development
October 30, 2014
http://www.swissbiotech.org
Drug development
Berne

European Antibody Congress 2014
November 10-12, 2014
http://www.terrapinn.com/conference
Biology
Geneva

3rd annual World Biosimilar Congress
November 11-12, 2014
http://www.terrapinn.com/conference
Drug development
Geneva

Swiss Biotech Finance Day
November 12, 2014
http://www.swissbiotech.org/events
Biotech / Finance
Zurich

2nd Swiss Green Economy Symposium
November 13, 2014
http://www.lifefair.ch/sges-2/index.html
Sustainability
Winterthur

NanoBioTech Montreux
November 17-19, 2014
http://www.nanotech-montreux.com/
Preclinical drug development
Montreux

EUREKA Innovation Event
November 19, 2014
http://www.swiss-innovation.com/eureka
Technology
Basel

EPFL Entrepreneurship Days
November 19-21, 2014
http://www.epfl-innovationpark.ch/epfled/
Entrepreneurship
Lausanne

9th Swiss Innovation Forum
November 20, 2014
http://www.swiss-innovation.com/
Innovation
Basel

Alp ICT Venture Night 2015
February 5, 2014
http://www.alpict.com/en/activites/
Entrepreneurship
Geneva