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State Secretariat for Education, Research and Innovation SERI
Swissnex in China
Innosuisse
Swiss Federal Office of Energy SFOE
Swiss Academies of Arts and Sciences

Switzerland.

Science-Switzerland, June – July 2021

News on Swiss science, technology, education and innovation

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Swissnex: New Location to Open in Japan

(Federal Department of Economic Affairs, Education and Research, July 24, 2021)

The President of Switzerland, H.E. Guy Parmelin, in the presence of Swiss Ambassador Dr. Andreas Baum recently announced a new Swiss Consulate in Osaka at a hybrid event in Tokyo, thereby marking a further expansion of Swissnex – the Swiss network for education, research and innovation. Due to open in the first half of 2022 in the dynamic Kansai region, this new Swissnex location will be headed by Dr. Felix Moesner and will help to further promote projects between research institutions, universities and startups in the two countries. This is an exciting development, because despite the geographical distance, the Swiss and Japanese economies have long enjoyed close links, as evidenced by the fact that Japan constitutes Switzerland's second largest trading partner in Asia. In addition, Japan is also a priority country in Switzerland's bilateral research cooperation, which will now be further strengthened.
/web/2021/00-210724-2b

Ranking: Switzerland Tops IMD World Competitiveness Rankings 2021

(IMD Business School, June 21, 2021)

Switzerland recently placed first in the newly-released World Competitiveness Rankings 2021 – a comprehensive annual report by the IMD Business School, which acts as a worldwide reference point on the competitiveness of countries, as well as on how they manage their competencies to achieve long-term value creation. Switzerland in particular topped the charts in the "public finances", "institutional framework", "finance" and "education" sub-categories, while also receiving high scores for its scientific infrastructure (3rd), health and environment (3rd), and productivity & efficiency (4th). Overall, this resulted in Switzerland placing 1st and 2nd in the "infrastructure" and "government efficiency" categories, respectively, as well to record noteworthy improvements in the "economic performance" (from 18th to 7th place) and "business efficiency" (from 9th to 5th) categories, compared to 2020.
/web/2021/00-210621-b9

Ranking: Switzerland Remains Most Innovative Country in Europe

(European Commission, June 22, 2021)

Switzerland once again topped the rankings of the recently-released "European Innovation Scoreboard" (EIS) – an annual publication that provides a comparative assessment of the research and innovation performance of EU Member States and selected third countries, based on 32 carefully selected indicators. In this context, the alpine country ranked first for the "attractive research systems", "intellectual assets" and "human resources" innovation dimensions, while also excelling in the "digitalization" (2nd), "employment impacts" (3rd) and "environmental sustainability" (3rd) dimensions. The EIS report was furthermore accompanied by the so-called "regional innovation scoreboard" (RIS), which assessed the innovation performance of European regions on a limited number of indicators.
/web/2021/00-210622-6a

Ranking: Swiss Universities Excel in QS Rankings

(Quacquarelli Symonds, June 10, 2021)

With seven universities prominently listed among the "top 200" of the recently released QS World University Rankings 2021, Switzerland once again confirmed its position as a global leader for world-class higher education and research. Ranked as the 8th best university in the world and remaining continental Europe's best university for a fourteenth consecutive year, ETH Zurich led the way, followed closely by EPFL, which maintained its impressive 14th position. Furthermore, the

University of Zurich secured its position as Switzerland's best comprehensive university at rank 70, while the University of Geneva (105), the University of Bern (119), the University of Basel (138) and the University of Lausanne (176) were also prominently listed among the 200 best universities in the world. Finally, after gaining more than 30 positions, the Università della Svizzera italiana (240) broke into the "top 250" in only its second appearance in the table.
/web/2021/00-210610-c6

1. Policy

Horizon Europe: Switzerland Currently With Third Country Status

(State Secretariat for Education, Research and Innovation, July 14, 2021)

The European Commission recently informed the State Secretariat for Education, Research and Innovation (SERI) that Switzerland will be treated as a non-associated third country in the EU Framework Program for Research and Innovation, Horizon Europe, until further notice. Researchers in Switzerland can nevertheless still participate in Horizon Europe and its related programs and initiatives, as well as apply for the program components and funding instruments open to them. In this context, wherever participation is possible, funding will be provided by SERI. However, participation in individual projects – particularly future calls for proposals from the European Research Council, Marie Skłodowska-Curie Actions and the European Innovation Council – is no longer possible.
/web/2021/01-210714-46

2. Education

EHL Institute of Nutrition R&D

(Ecole hôtelière de Lausanne, July 06, 2021)

The Ecole hôtelière de Lausanne (EHL) recently launched a new applied research institute – the "EHL Institute of Nutrition R&D" – which aims to develop cutting-edge solutions in food and kitchen management for healthier food with a positive social and ecological impact. To achieve this, the new Institute will collaborate with Nestlé Research & Development to translate scientific discoveries into prototypes and new recipes for Nestlé's research and the R&D Accelerator project, as well as to jointly work on academic publications. In this context, EHL students, guided by EHL chefs, will for example be exposed to Nestlé's strong expertise in science and technology in R&D workshops, thereby helping them to create new recipes and food ideas.
/web/2021/02-210706-d7

Soft Skills Are Not Acquired Automatically

(EPFL, June 18, 2021)

EPFL PhD student Cyril Picard, together with Professor Jürg Schiffmann, Cécile Hardebolle and Roland Tormey, recently investigated what approaches could promote the development of professional skills among engineering students and found that while it is important for students to work in groups during their studies, that is not enough for them to acquire many of the transversal skills needed in the professional world. Instead, the study highlights the need for engineering courses to explicitly address professional skills through a combination of theory and feedback. Although these findings are not

necessarily surprising, they nevertheless provide vital insights to expand our understanding of how projects can be effectively incorporated into traditional classes.
/web/2021/02-210618-e4

3. Life Science

Early Detection Test for Breast Cancer

(University of Fribourg, June 10, 2021)

A team of researchers led by University of Fribourg Professor Curzio Ruegg, in collaboration with the Fribourg Hospital, the Neuchâtel Hospital Network and the Clinica Luganese, recently demonstrated that, even at an early stage, breast cancer causes an immune system reaction that can be detected by a simple blood test, thereby opening up promising new avenues to being able to detect and monitor cancers prior to them being visible on a mammogram. To achieve this, the team used a flow cytometry technique, as well as an algorithmic analysis, to study the white blood cells of breast cancer patients, which enabled them to discover significant differences in the frequency and characteristics of these cells between women with and without cancer. These differences were subsequently shown to disappear after surgical removal of the tumor.
/web/2021/03-210610-b2

Investigating How Immune Cells Are Activated

(University of Basel, June 16, 2021)

A Swiss research consortium led by University of Basel Professor Stephan Grzesiek, in collaboration with scientists from the University of Geneva and the Paul Scherrer Institute, recently succeeded in decoding the activation mechanism of the chemokine receptor "CCR5" – which plays a major role in inflammation and immune defense – thereby providing important insights for the development of effective treatments for AIDS, cancer and inflammatory diseases. Specifically, by using cryo-electron microscopy tools, the researchers discovered that certain amino acids must arrange themselves in a particular pattern so that a specific part of the chemokine structure can fit into the CCR5 "lock", which subsequently activates a change in the structure of the receptor, thereby enabling it to trigger the activation and migration of white blood cells.
/web/2021/03-210616-40

Microscopy Deep Learning Predicts Viral Infections

(University of Zurich, June 21, 2021)

A team of researchers led by University of Zurich Professor Urs Greber recently developed a machine-learning algorithm, which is not only able to reliably identify cells that have been infected with herpes or adenoviruses, but also to accurately detect virulent infections in advance, based solely on the fluorescence of the cell nucleus. This is a promising development, because as explained Greber, the method "opens up new ways to better understand infections and to discover new active agents against pathogens, such as viruses or bacteria." Specifically, the team was able to demonstrate that the algorithm is capable of identifying acute and severe infections with 95% accuracy and up to 24 hours in advance. However, it is not yet clear which features of infected cell nuclei are recognized by the artificial neural network to distinguish the two infection phases.
/web/2021/03-210621-59

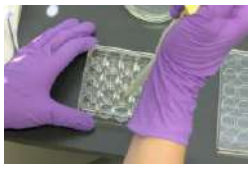
Research to Better Understand SARS-CoV-2

(Paul Scherrer Institute, June 22, 2021)

Since the beginning of the COVID-19 pandemic, researchers at the Paul Scherrer Institute have been making important contributions to expand our understanding of the novel coronavirus SARS-CoV-2, as well as to develop effective strategies to prevent it from spreading and to treat infected individuals. This for example has included the discovery of why certain mutations in the so-called "spike protein" of SARS-CoV-2 are responsible for increasing the viral transmission of COVID-19 (Freie Universität Berlin, Gebhard Schertler), increasing our understanding of the molecular details that make certain virus variants more infectious than others (Roger Benoit), as well as developing a diagnostic method that should reveal how and where in the body the so-called "ACE2" protein is formed, which acts as the virus's entry point into the human cell (Cristina Müller).
/web/2021/03-210622-b3

First in Vitro Method for Ecotoxicity Testing

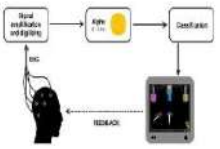
(Eawag, June 24, 2021)



The OECD recently approved a fish cell line assay developed at Eawag as the latest guideline in the field of environmental toxicology, thereby paving the way for companies and authorities around the world to determine the environmental toxicology of chemicals without having to resort to animal testing. This is a vital development, because as expressed by Professor Kristin Schirmer, who, together with Melanie Fischer, took the lead in driving this pioneering work forwards, the demands on environmental risk assessment continue to grow significantly, as well as the number of new chemicals and products that need to be tested. In addition, the fish cell line assay also conserves valuable resources, such as chemicals, water and time, as well as opens the door to an animal-free approval procedure.
/web/2021/03-210624-07

Brain Training Improves Attention Deficit Disorder

(University of Geneva, June 29, 2021)



A team of researchers from the University of Geneva and the University Hospitals of Geneva recently demonstrated that a special type of brain training, based on the principle of "neurofeedback", can help individuals with attention deficit disorder to improve their ability to concentrate without having to resort to pharmacological and or invasive treatments. As explained by post-doctoral researcher Tomas Ros, the aim of neurofeedback is to make patients aware of the moments when they are no longer attentive, thereby enabling brain networks to gradually "learn" to reduce attentional lapses through neuroplasticity. In the context of the study, this was achieved with a video game, which the patients could control with the power of their attention.
/web/2021/03-210629-61

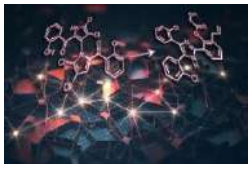
Minimally Invasive Cardiac Assist Device

(EPFL, June 30, 2021)

A team of scientists led by EPFL Professor Yves Perriard, together with researchers from the University of Bern, recently successfully implanted – in vivo – a novel cardiac assist device that is devoid of rigid metallic components and ultimately enhances the aorta's natural function. This novel device consists of a dielectric elastomer actuator (DEA), which is placed around the aorta near the aortic valve, thereby enabling it to artificially constrict and dilate the aorta when an electric voltage is applied. Perriard furthermore explained that this device is minimally invasive, as it does not touch the heart directly, and, in principle, also preserves red blood cells, due to its lack of rigid metallic components.
/web/2021/03-210630-3f

Using AI to Discover New Nature-Inspired Drugs

(ETH Zurich, July 07, 2021)



A team of ETH Zurich researchers led by Professor Gisbert Schneider recently demonstrated that artificial intelligence algorithms can be used in a targeted manner to design active ingredients with the same effects as natural substances, but with simpler structures. This is significant, because it not only could make it much easier, and therefore cheaper, to manufacture new drugs, but also to find compounds that do the same things as existing drugs, but are based on different structures. To achieve this, the researchers first developed an AI method that could reliably narrow down the protein targets of natural products, before subsequently tasking another AI program to find molecules that have similar chemical functionalities to the natural model, despite having a different structure, and which could be produced in a maximum of three synthesis steps.
/web/2021/03-210707-b9

Prostate Tumor Growth Enhanced by "Molecular Switch"

(Università della Svizzera italiana, July 08, 2021)

A team of Università della Svizzera italiana researchers led by Giuseppina Carbone, in collaboration with Carlo Catapano and Andrea Cavalli recently discovered an unexpected mechanism that drives the evolution of the largest group of prostate tumors – known as "ERG fusion-positive prostate cancer" – thereby defining a new path for treating patients and preventing further progression of the disease. Specifically, the researchers discovered that the so-called "EZH2" gene acts as a "molecular switch", which can enhance the tumorigenic activity of ERG by adding a methyl group to a specific site of the gene. The team furthermore observed that EZH2 activity, and by extension, ERG methylation, also increased as a result of the deletion of the PTEN gene, which is widespread in prostate cancers and is often associated with ERG fusion-positive tumors.
/web/2021/03-210708-46

How Micro-Circuits in Brain Regulate Fear

(University of Bern, July 16, 2021)

A team of researchers led by University of Bern Professor Stéphane Ciocchi and University of Basel Professor Andreas Lüthi were recently able to demonstrate how a specific group of neurons in the central amygdala can regulate the suppression of fear responses. This is important, because it could contribute to the development of more specific therapies for anxiety and trauma-related disorders. To achieve this, the researchers first studied the activity of neurons of the central amygdala during the suppression of fear responses and subsequently shut down the activity of a specific neuronal population with pulses of light. As explained by Ciocchi, the optogenetic silencing completely abolished the suppression of fear and provoked a state of pathological fear, thereby illustrating that neurons in the central amygdala are highly adaptive and essential for suppressing fear.
/web/2021/03-210716-73

4. Nano / Micro Technology / Material Science

Unlocking Secrets of Porous Material

(Università della Svizzera italiana, June 02, 2021)

A group of researchers from USI's Euler Institute, the Pacific Northwest National Laboratory, and the Istituto Italiano di Tecnologia recently used computer simulations to illustrate the much-debated role of water in zeolites – a class of materials, which have pores in different sizes that allow them to be used in a range of different applications, such as catalysis. The findings in particular demonstrated that water forms

clusters on the walls of the pores, like moss on a rock, regardless of pore size or other zeolite properties, thereby affecting the reactivity of the entire system by forming nanometer-sized droplets that solvate the active protons. Given that water is present in many key chemical transformations, these insights are vital to helping researchers further improve the efficacy of strategies that aim to control zeolite reactivity.
/web/2021/04-210602-66

Aging Process of Widely-Used Catalyst

(Paul Scherrer Institute, June 09, 2021)

A team of Paul Scherrer Institute researchers led by Zirui Gao, together with ETH Zurich and Clariant, recently developed a new tomography method with which they can precisely measure chemical properties inside catalyst materials in 3-D in a fraction of the time that it previously took. Specifically, the team wanted to better understand the processes in the nano-structure and at the atomic scale that cause so-called VPOs – widely used catalysts in the chemical industry – to exhibit a slight loss of their desired properties over years of use. To achieve this, the researchers not only used two state-of-the-art material characterization techniques, but also developed a new principle of data acquisition, as well as an associated reconstruction algorithm, which enabled them to obtain the required data in only about two days of measurement.
/web/2021/04-210609-ee

Investigating Material Structure Commonly Used in Electronics

(EPFL, June 09, 2021)

A team of EPFL scientists led by Professor Dragan Damjanovic and his PhD student Sina Hashemizadeh recently made an important discovery about the structure of barium titanate – a ferroelectric material used in nearly all electronic devices – which could help researchers better understand energy loss in these kinds of materials. Specifically, the team was able to demonstrate that the atoms tend to prefer to move in certain directions, meaning that there are nanometric-sized areas where all the atoms move in the same way, which, although extremely small, nevertheless have repercussions on a much larger scale. In order to obtain these findings, the researchers used one of world's most powerful electron microscopes – the Titan Themis – to observe the atomic structures of barium titanate and barium-strontium titanate in the cubic phase.
/web/2021/04-210609-5a

Unique Properties of Ferroelectrics

(ETH Zurich, June 09, 2021)

A team of ETH Zurich researchers led by Marie Curie Fellow Chiara Gattinoni is currently using the "Piz Daint" supercomputer at the Swiss National Supercomputing Center to investigate a special class of materials called "ferroelectrics", which could constitute the heart of low-energy-consuming, miniaturized data storage in electrical devices in the future. In this context, the team for example was able to provide new insights on how ferroelectric materials could be engineered to sustain stable polarization – even in very thin nano-scale films – which would make it possible to "write" on the material with an electric field and use it to store information, as explained by Gattinoni. The team also investigated the "magical" properties of bismuth ferrite, which could contribute to the development of a more efficient technology for water splitting, and by extension, to an eco-friendly hydrogen economy.
/web/2021/04-210609-ff

Swiss Nanotechnology Startup Prize

(startupticker.ch, June 29, 2021)

ETH Zurich spin-off Anavo Medical recently won the startup award at the Swiss NanoConvention 2021, which was organized for the second time by the Swiss MNT Network, thereby earning them CHF 10k in prize money. Anavo Medical in particular developed a nanoparticle paste that boosts the body's own

capacity of self-healing, thereby keeping skin transplants alive and bacterial infections in check. To achieve this, their approach harnesses the wound-healing power of low-cost inorganic hybrid materials, which can be manufactured on a large scale. This enabled the startup to produce prototypes that not only adhere strongly to tissue and stop bleeding, but which also have additional antimicrobial, anti-inflammatory and tissue-regenerative properties.
/web/2021/04-210629-73

Connecting Ultra-Thin Semiconductors to Superconductors

(University of Basel, July 06, 2021)

A team of University of Basel researchers led by Dr. Andreas Baumgartner recently equipped an ultra-thin semiconductor – molybdenum disulfide, to be exact – with superconducting contacts for the first time, which, when combined with superconductors, is expected to give rise to new quantum phenomena and find use in quantum technology. Encouragingly, the researchers found indications of a strong coupling between the semiconductor layer and the superconductor, which, as explained by lead author Mehdi Ramezani, is a key element in the new and exciting physical phenomena that they expect to see in such "van der Waals heterostructures", but were never able to demonstrate. Baumgartner moreover added that, in principle, the vertical contacts can be applied to a large number of semiconductors.
/web/2021/04-210706-f7

5. Information & Communications Technology

Towards Reliable Quantum Machine Learning

(ETH Zurich, June 08, 2021)

A research group led by ETH Zurich Professor Ce Zhang, together with Professor Nana Liu from Shanghai Jiao Tong University and Professor Bo Li from the University of Illinois Urbana-Champaign, recently developed a new approach that allows them to prove the robustness conditions of certain quantum-based machine learning models, for which the quantum computation is guaranteed to be reliable and the result to be correct. The researchers were subsequently also able to develop a protection scheme that can be used to specify the error tolerance of a computation, regardless of whether an error has a natural cause or is the result of manipulation from a hacking attack. This is important, because as underlined by the American Physical Society, the vulnerability of today's quantum computers to error constitutes a major obstacle to scaling them up.
/web/2021/05-210608-b3

New "Scientific Computing, Theory, and Data" Research Division

(Paul Scherrer Institute, July 01, 2021)

The Paul Scherrer Institute, in cooperation with EPFL, recently established a new research division entitled "Scientific Computing, Theory, and Data," which will enable an interdisciplinary group of researchers to take up important developments in a wide variety of future-oriented topics, such as the expansion of data sciences, the simulation of materials, and the area of artificial intelligence. The new research division will not only be composed of already existing units at EPFL and PSI, as well as others that will be newly established, but will also be tightly networked within the ETH Domain, which comprises the Swiss Federal Institutes of Technology (EPFL & ETH Zurich) and four major research institutes (PSI, Empa, Eawag & WSL), as well as strategic and governing bodies. In addition, close cooperation is planned with the NCCR-MARVEL.
/web/2021/05-210701-71

Multifunctional Liquid-Filled Optical Fibers

(Empa, July 05, 2021)

A team of Empa scientists led by Rudolf Hufenus recently developed a two-component optical fiber, with a liquid core made of glycerol and a sheath made of a fluoropolymer, which is more robust than conventional glass fibers and can transmit data just as reliably. Experiments by the team moreover revealed that this new fiber can not only withstand up to 10% elongation before subsequently returning to its original length – a feat which no other solid-core optical fiber is capable of – but also that it can measure the change in length or the tensile load that is occurring. This is particularly exciting, because it implies that these liquid-filled fibers could potentially also be used for force transmission in micromotors and microhydraulics, in addition to signal transmission and sensing, as explained by Hufenus.
/web/2021/05-210705-e3

New "Applied Machine Intelligence" Research Group

(Bern University of Applied Sciences, July 07, 2021)

The Bern University of Applied Sciences recently created a new research group at the Institute for Data Applications and Security, under the leadership of Professors Erik Graf and Mascha Kurpicz-Briki, which will focus on identifying and defining solutions to the scientific, engineering, and societal challenges of machine intelligence. Specifically, the group will cooperate with industry, academic research groups and non-profit organizations to build applications that can offer novel functionalities or expand beyond existing capabilities based on machine learning, while placing a particular emphasis on the following domains: smart text applications, search & recommendation systems, and accelerating research for social good.
/web/2021/05-210707-45

New Approach to Implement Virtual Memory in Data Centers

(EPFL, July 12, 2021)

A team of EPFL researchers recently pioneered an innovative approach to implementing virtual memory in data centers, which will greatly increase server efficiency. As explained by Professor Babak Falsafi, this new technology, called "Midgard", enables the all-important data lookups and protection checks to be done directly in on-chip memory, rather than in virtual memory, thereby removing so much of the traditional hierarchy of lookups and translations that it scores a net gain in efficiency, even as more memory is deployed. Significantly, Midgrid remains compatible with existing operating systems, such as Windows, MacOS and Linux, despite the fact that it represents a paradigm shift.
/web/2021/05-210712-af

6. Energy / Environment

Plastic Waste in Sea Mainly Drifts Near Coast

(University of Bern, June 02, 2021)

A team of University of Bern researchers led by Victor Onink recently calculated the global distribution of plastic waste and found that far more of it than previously thought remains near the coast or ends up on beaches. Specifically, Onink explained that their models not only indicated that "about 80 percent of floating plastic waste drifts no more than 10 kilometers from the coast five years after it entered the ocean," but also that between a third to virtually all of the buoyant plastic washed into the sea is stranded." This in turn has serious consequences for the environment, as coastal ecosystems are particularly sensitive to plastic

pollution. The Bernese ocean modelers furthermore found that a lot of beached plastic is from local sources, especially when the local sources are large, and that Ocean currents also play a major role in the distribution of waste.
/web/2021/06-210602-2b

Synthetic Fuels Produced With Renewable Energy

(Empa, June 08, 2021)

In Empa's mobility demonstrator, "move", a team of researchers led by Christian Bach recently launched a new project in which they are investigating the production of synthetic methane from an energy, technical and economic perspective. Specifically, the project will focus on the production of synthetic methane from hydrogen and CO2 – using the so-called "sorption-enhanced methanization" process – which can subsequently be transported via conventional routes and made available through the existing infrastructure. In this context, the CO2 for the methanization, as well as water for hydrogen production, is taken directly from the atmosphere with a CO2 collector from the ETH Zurich spin-off Climeworks. In addition, the project consortium consists of partners who cover the entire value chain.
/web/2021/06-210608-bf

Calculating CO2 Emissions of Hydroelectric Resevoirs

(Eawag, June 14, 2021)

A team of Eawag scientists led by Professor Bernhard Wehrli and postdoctoral researcher Elisa Calamita, in collaboration with colleagues from Italy and the Netherlands, recently analyzed how much CO2 escapes into the atmosphere below the Kariba Dam in southern Africa for the first time, thereby shedding light onto an often-neglected topic – the greenhouse gas emissions downstream of hydropower plants. This is important, because although hydropower is considered to be CO2-neutral, reservoir emissions are actually estimated to account for about 2-3% of humanity's total greenhouse gas footprint. In the case of the Kariba Dam, the researchers in particular found that water remained in the reservoir for an average of three years, thereby giving biogeochemical processes ample time to form CO2 from decaying organic material.
/web/2021/06-210614-93

Successful "Ice Memory" Mission

(Paul Scherrer Institute, June 15, 2021)

A team of researchers from the Paul Scherrer Institute, the Institute of Polar Sciences of the Consiglio Nazionale delle Ricerche, and the Università Ca' Foscari Venezia recently extracted three shallow ice cores (15-22 meters deep) and two deep ice cores (82 meters deep) from the glacier saddle of Colle Gnifetti. These cores not only contain precious information on the climate and environment of ten thousand years ago, but they will also be preserved in an ice core archive for future generations of researchers as part of the "Ice Memory" program. Obtaining these samples was by no means an easy task however, because as explained by Theo Jenk, "considering the extreme location of sampling sites such as the one on Colle Gnifetti, the high altitude of more than 4,500 meters and the often-harsh weather conditions, such success can never be guaranteed."
/web/2021/06-210615-8b

Raising Awareness of Relationship Between Health and Environment

(Swiss Academy of Medical Sciences, June 18, 2021)

With anthropogenic climate change projected to jeopardize medical progress made in recent decades, the Swiss Academy of Medical Sciences is seeking to raise awareness of the relationship between health and the environment through a series of publications. University of Lausanne Professor Nicolas Senn for example discussed the topic of "co-benefits" – helping to protect the environment while also improving

health – in the SAMS Bulletin 4/2020. This concept was also explored in depth in the Revue Médicale Suisse with a comprehensive, interactive literature review, which contends that a real paradigm shift is needed in our society, in the healthcare system, and regarding our understanding of health. Finally, the Biodiversity Forum of the Swiss Academy of Sciences published a factsheet that illustrates how biodiversity contributes to a healthy life.
/web/2021/06-210618-64

High Number of Potentially Hazardous Chemicals in Plastics

(ETH Zurich, June 22, 2021)

A team of researchers led by ETH Zurich Professor Stefanie Hellweg recently compiled a comprehensive database of the plastic monomers, additives and processing aids that are used in the production and processing of plastics on the world market, as well as systematically categorized them on the basis of usage patterns and hazard potential. The researchers were in particular alarmed to find that, as explained by lead author Helene Wiesinger, nearly a "quarter of all the chemicals used in plastic are either highly stable, accumulate in organisms or are toxic," as well as that "many of the questionable substances are barely regulated or are ambiguously described." According to the researchers, this is primarily due to the lack of transparency in chemicals in plastics and dispersed data silos.
/web/2021/06-210622-ef

Analyzing Mechanisms That Trigger Volcanic Eruptions

(University of Geneva, June 22, 2021)

A team of geologists and geophysicists led by University of Geneva Professor Luca Caricchi recently reviewed the internal and external mechanisms that trigger volcanic eruptions, thereby not only helping to refine models of volcanic processes, but also to reduce the impact of volcanic eruptions on the more than 800 million people who currently live near active volcanoes. Encouragingly, the researchers concluded that most of the magma rising from depth actually does not cause a volcanic eruption, as this requires several conditions to be met simultaneously. In addition, the researchers also demonstrated that older volcanoes tend to produce less frequent, but larger and more dangerous eruptions.
/web/2021/06-210622-4e

Bio-Inspired Electricity Sources

(University of Fribourg, June 24, 2021)

A team of researchers led by University of Fribourg Professor Michael Mayer recently developed a bio-inspired electricity source that exploits differences in salt concentrations – known as an "ion gradient" – to produce an electrical current, which could potentially power wearable or implantable electronics in the future. This is particularly exciting, because the researchers had previously also investigated the development of a sustainable process that could be used to recharge a bio-inspired battery – in this case, by harvesting energy from a breath-generated ion gradient – thereby illustrating that there are achievable ways for a user to passively supply fuel for a power source.
/web/2021/06-210624-de

Removing Lead Hazard From Perovskite Solar Cells

(EPFL, July 16, 2021)

A team of EPFL researchers led by Professor László Forró recently developed a very elegant and efficient solution to prevent lead from seeping into the soil in cases of solar panel failure, thereby rendering perovskite-based devices much safer to use in the environment or close to humans. This innovative new method in particular involves using a transparent phosphate salt, which, as explained by researchers Endre Horvath and Marton Kollar, instantaneously reacts with lead ions in the presence of water and

precipitates them into extremely non-water-soluble lead phosphates, which can subsequently be recycled. Moreover, this "fail-safe" chemical solution does not impact the solar cell's light-conversion efficiency.
/web/2021/06-210716-1f

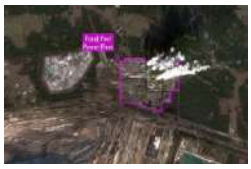
Energy Funding Program 2013-2020

(Innosuisse, July 22, 2021)

Innosuisse recently published the Final Report of the Energy Funding Program 2013-2020, which aimed to develop and implement solutions to pressing issues relating to the energy transition in Switzerland. The core element of this program was unquestionably the establishment and management of eight Swiss Competence Centers for Energy Research (SCCERs) in seven action areas, which, on average, brought together more than 1,300 researchers each year, who developed some 70 innovative products, services and processes, as well as built and operated more than 340 prototypes, pilot plants and demonstrators. Overall a total of CHF 724.6 million was available for Swiss energy research during the course of the program, resulting in a total of 1,561 projects – over 900 of which involved a business and/or community implementation partner.
/web/2021/06-210722-df

Monitoring CO2 Emissions From Space

(University of St.Gallen, July 22, 2021)

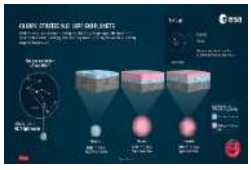


A team of researchers led by University of St.Gallen Professor Damian Borth and Dr. Michael Mommert recently developed an AI-based approach that can identify fossil fuel power plants and quantify their emissions using freely available satellite data from ESA. This data could in turn be linked with sustainability reports worldwide to verify whether the information provided by power plants corresponds to the real measured CO2 emissions, thereby enabling rating agencies to use this information to rate companies on environmental issues. It is important to note however that the results of these evaluations do not only serve as indirect "leverage" or "incentive" for climate-friendly action, but also provide essential information for many other areas, such as the protection of biodiversity, the monitoring of air quality in urban areas or the protection of nature in agriculture.
/web/2021/06-210722-62

7. Engineering / Robotics / Space

CHEOPS Detects Transit of Unique Exoplanet

(University of Bern, June 28, 2021)



While studying two exoplanets in a bright nearby star system with the CHEOPS satellite, a team researchers led by the Universities of Geneva and Bern unexpectedly spotted the system's third known planet crossing the face of the star. This is particularly exciting, because it is the first time that an exoplanet with a revolution period of over 100 days has been spotted transiting a star that is bright enough to be visible to the naked eye, thereby making it a "golden target for future study with no known equivalent," as pointed out by Professor David Ehrenreich. By combining these measurements with archival data from other observatories, as well as numerical models, the researchers were also able to accurately characterize the density and composition the planet and its neighbors, which in particular revealed that the two outer planets hold large amounts of water.
/web/2021/07-210628-0e

Swiss Drone Industry Report

(startupticker.ch, July 07, 2021)

The Drone Industry Association Switzerland recently published the first comprehensive analysis of the Swiss Drone Industry, which only provides valuable insights on the strengths of Swiss drone companies, but also on the competitiveness of the Swiss drone market. Overall, the report paints a very dynamic picture of the industry, due in particular to the alpine country's high number of startups, which have a leading presence in nearly all niche segments for drones and ensure a high export share, thanks to their cutting-edge hardware and software innovations. The report moreover highlighted that several factors have contributed to Switzerland's pioneering role in drone technology, such as the "Swiss-made" label, access to talent, and the local ecosystem, which features a favorable regulatory framework.
/web/2021/07-210707-96

Drone-Borne Water-Detection Device

(WSL, July 07, 2021)

The Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) recently launched its first-ever spin-off company – TerraRad Tech AG – in order to commercialize a groundbreaking, drone-borne microwave radiometer, which can provide high-resolution data on farmland, glaciers, wildfires, and coastal infrastructures that are directly sensitive to water. In doing so, this new instrument provides a cost-effective alternative to satellite and ground-based moisture measurements, with possible applications including the optimization of irrigation and yield prediction for agriculture, monitoring glacier hydrology, mapping and assessing the risk of wildfires, and identifying leaks within levees and dams.
/web/2021/07-210707-c1

AI Drone Outperforms Human Racing Pilots

(University of Zurich, July 21, 2021)

A team of researchers led by University of Zurich Professor Davide Scaramuzza recently developed a novel algorithm that enabled an autonomous quadrotor to outperform two world-class human pilots in a drone race for the first time. To achieve this, the algorithm generates time-optimal trajectories that fully consider the drones' limitations, rather than relying on simplifications of either the quadrotor system or the description of the flight path, as previous works had. As explained by first author Philipp Föhn, this means that instead of assigning sections of the flight path to specific waypoints, the algorithm simply tells the drone to pass through all waypoints, but not how or when to do that, thereby enabling it to find the optimal trajectory, which can also consistently be reproduced.
/web/2021/07-210721-ac

Seismic Data Clarifies Inner Structure of Mars

(ETH Zurich, July 22, 2021)

A team of researchers at ETH Zurich and the University of Zurich, together with an international team of colleagues, recently used seismic data from NASA's InSight lander to look inside Mars for the first time, thereby revealing vital information about the structure of the planet's crust, mantle, and core, which can help scientists to learn more about the planet's – and by extension the entire solar system's – formation and evolution. For example, the researchers were able to confirm that Mars presumably was once completely molten before dividing into the crust, mantle, and core we see today, as well as that Mars' thick lithosphere appears to consist of only one plate, in contrast to Earth with its seven large continental plates. The measurements moreover indicated that the Martian core is liquid and larger than expected.
/web/2021/07-210722-31

Europe's First Operational Model Hyperloop

(EPFL, July 23, 2021)

A team of engineers from EPFL and Swisspod recently unveiled a Hyperloop test track on the Lausanne campus, which will enable them to simulate an infinitely long Hyperloop with pods of various sizes under vacuum at a scale of 1:12, and eventually also at 1/6. This is an exciting development, because Hyperloops stand to revolutionize long-distance travel, as they offer a cleaner alternative to planes and are faster than trains. As explained by Professor Mario Paolone, this reduced-scale test track will in particular enable them to study the fundamental aspects of their pod's electromagnetic propulsion and levitation system, which features an innovative low-power linear induction motor that is currently being developed by Swisspod, EPFL's DESL lab and HEIG-VD, with the support of an Innosuisse grant.
/web/2021/07-210723-b0

8. Physics / Chemistry / Math

Machine-Learning Model to Predict Oxidation States

(EPFL, July 05, 2021)

A team of EPFL chemical engineers led by Professor Berend Smit recently developed a machine-learning model that can predict a compound's oxidation state, which, simply put, describes how many electrons an atom must gain or lose in order to form a chemical bond with another atom. This is a vital development, because as underlined by Smit, "oxidation states play such an important role in the fundamentals of chemistry that some have argued that they should be represented as the third dimension of the periodic table." In this context, the researchers' new machine-learning model in essence captured the collective knowledge of the chemistry community, which was derived from the Cambridge Structural Database, thereby enabling it to categorize a famous group of materials – the so-called "metal-organic frameworks" – by oxidation state.
/web/2021/08-210705-7a

Highly-Efficient Chemical Light Amplifiers

(Empa, July 13, 2021)

A team of Empa researchers led by group leader Jakob Heier and PhD student Surendra B. Anantharaman, together with colleagues from ETH Zurich, EPFL, PSI and IBM Research Zurich, recently succeeded in creating highly efficient chemical light amplifiers known as "J-aggregates", which have a wide range of applications, such as organic solar panels, sensors, ultra-fast data transmission or microscopy. These structures are particularly unique, because unlike classic silicon semiconductors, where the excitation energy is transported via charge carriers, such as electrons, which "hop" through the material, the electrons only oscillate back and forth in the dye molecule of a J-aggregate, and never leave it. This means that only oscillations are transmitted, rather than electrons, thereby enabling J-aggregates to "transmit" energy on the smallest scale.
/web/2021/08-210713-bc

Real-Time Observation of Proteins at Atomic Scale

(EPFL, July 20, 2021)

A team of EPFL scientists led by Professor Ulrich Lorenz recently developed a new cryo-electron microscopy (cryoEM) method that can capture images of protein movements with atomic precision at the microsecond – a millionth of a second – timescale, thereby opening the possibility to directly study a wide range of previously inaccessible processes. To achieve this, the researchers first used a laser pulse to

rapidly melt a vitrified protein sample – a sample that has been embedded in a glass-like form of ice – to the point where they could induce it to move in the way that proteins usually do in their natural liquid state in cells. After the laser pulse, the sample was subsequently re-vitrified in just a few microseconds, thereby trapping the particles in their transient configurations and enabling the researchers to observe them with conventional cryoEM methods.
/web/2021/08-210720-6a

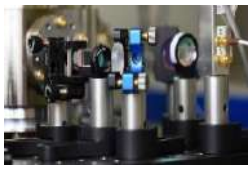
Meta-Stable States of Physical and Quantum Systems

(ETH Zurich, July 26, 2021)

ETH Zurich researcher Nicolò Defenu recently developed an elegant new theory to explain why some physical systems – especially in the quantum world – do not reach a stable equilibrium, even after a long time, thereby shedding light on a phenomenon, which scientists have observed numerous times in experiments. This explanation in particular applies to systems in which the individual building blocks influence not only their immediate neighbors, but also objects further away. In this context, Defenu was able to illustrate that the energy spectrum always remains discrete in systems in which long-range interactions occur, thereby resulting in them adopting a meta-stable state in which they always return to their initial position, as opposed to reaching a stable equilibrium.
/web/2021/08-210726-0b

High-Precision Reference Frequency Network

(ETH Zurich, July 29, 2021)



As part of the Swiss National Science Foundation's Sinergia program, a team of researchers at ETH Zurich, the University of Basel, the Swiss Federal Institute of Metrology (METAS) and the SWITCH Foundation recently demonstrated that precision reference signals, which are used to calibrate highly precise time measurements needed for many scientific experiments, can be sent via conventional telecommunications infrastructure. To achieve this, the project established a trial network, which used the existing SWITCH network – Switzerland's academic data network – to transmit the reference signal within the so-called L band, which is still mostly uncongested and has a different base frequency than data traffic, from the METAS site to the University of Basel and ETH Zurich.
/web/2021/08-210729-a5

9. Architecture / Design

Wooden Bridges to Decarbonize Infrastructure Construction

(Bern University of Applied Sciences, June 15, 2021)

In an effort to identify viable options for decarbonizing infrastructure construction, which currently constitutes one of the biggest sources of carbon emissions in Switzerland, the Federal Roads Office, under the direction of Bern University of Applied Sciences Professor Andreas Müller and in collaboration with several business partners, including Timbatec, recently launched a new research project to develop waterproofing options and bituminous surfacing for bridges with wooden roadway slabs. Specifically, the team aims to use the so-called "TS3 technology" (Timber Structures 3.0), which enables large wooden surfaces to be created using pouring-to-solid on the face side of timber components, in order to construct a long-span bridge from timber as an initial exhibition object.
/web/2021/09-210615-cf

3D-Printed Unreinforced Concrete Bridge

(ETH Zurich, July 19, 2021)

A team of architects and engineers from the Block Research Group at ETH Zurich, together with Zaha Hadid Architects and other partners from industry, recently used a new type of 3D-printed concrete to build a 12-by-16-meter arched footbridge in a park in Venice, which not only requires significantly less material than conventional structures, but also removes the need for steel reinforcements or mortar. As explained by Professor Philippe Block, this precise method of 3D concrete printing in particular enabled them to combine the principles of traditional vaulted construction with digital concrete fabrication, thereby limiting the use of material to only where it was structurally necessary. Moreover, thanks to the absence of mortar, the materials can simply be separated and reassembled, or recycled, if the construction is no longer needed.
/web/2021/09-210719-b1

Aerogel Architecture Award 2021

(Empa, July 26, 2021)

Empa, together with industry partners Fixit, AGITEC AG, HAGA AG Naturbaustoffe, HASIT Trockenmörtel GmbH and the AdvaPor association, recently presented the first Aerogel Architecture Award to the Swiss architect Michael Ledermann from Langenthal for his careful renovation of an old mill building in the canton of Bern. In addition, due to the close ranking, the jury decided not to award a third prize, but rather, awarded two second prizes to the following architects: Verena Klar proposed an energy efficiency design of a listed Biedermeier house in Tübingen dating from 1829 to make it more energy-efficient, while Jörg Hofmann designed a renovation of a building at the Bauhaus University in Weimar to make it more energy-efficient.
/web/2021/09-210726-c9

Winners of Art Residency Program "Connect"

(CERN, July 27, 2021)

Arts at CERN and the Swiss Arts Council Pro Helvetia recently announced the selected artists for the first edition of "Connect" – an international program that aims to foster experimentation in the arts in connection with fundamental science, and which consists of the following two fully-funded artistic residencies: Connect – a three-month residency at CERN aimed at Swiss artists – was awarded to the artistic collective "AATB" of Andrea Anner and Thibault Brevet, while Connect South Africa – a dual residency for a Swiss artist and an artist from South, West or East Africa – was awarded to Ian Purnell and Kamil Hassim.
/web/2021/09-210727-ba

10. Economy, Social Sciences & Humanities

Bilingualism as a Natural Therapy for Autistic Children

(University of Geneva, June 03, 2021)

University of Geneva researcher Stéphanie Durrleman, in collaboration with the Universities of Thessaly and Cambridge, recently demonstrated that bilingualism allows autistic children to partially compensate for deficits in theory of mind and executive functions, which are at the root of many of their challenges. Specifically, the researchers asked 103 autistic children, 43 of whom were bilingual, to perform various tasks and found that the bilinguals consistently scored higher than their monolingual peers – giving 76% correct answers for tasks relating to theory of mind, compared to 57% for the monolingual children, as well

as providing the correct response for executive functions twice as often as the monolinguals. These results can be explained by the fact that bilingualism provides a real gymnastics for the brain, which acts precisely on the deficits linked to the autistic disorder.
/web/2021/10-210603-91

Language Extinction Triggers Loss of Medicinal Knowledge

(University of Zurich, June 09, 2021)

According to a recent study by University of Zurich Senior researcher Rodrigo Cámara Leret and Professor Jordi Bascompte, language loss may be even more critical to the extinction of medicinal knowledge than biodiversity loss, as more than 75% of the world's medicinal plant applications were found to be linguistically unique. Specifically, the researchers found that threatened languages support over 86% of all unique knowledge in North America and Amazonia, and 31% of all unique knowledge in New Guinea. By contrast, less than 5% of medicinal plant species were threatened. Bascompte therefore contends that the next steps will require "mobilizing resources for the preservation, revitalization and promotion of these threatened languages," as well as launching large-scale community-based participatory efforts to document endangered medicinal knowledge.
/web/2021/10-210609-2a

Application for Teaching Children's Rights to Children

(Eastern Switzerland University of Applied Sciences, July 05, 2021)

An interdisciplinary team of researchers from the Eastern Switzerland University of Applied Sciences, UNICEF Switzerland and Liechtenstein, as well as PH Luzern, recently launched a new project that aims to develop a digital solution to more effectively inform children of their rights. This is important, because despite the fact that children and adolescents often obtain new insights by using smartphones, most information on the U.N. Convention on the Rights of the Child is disseminated via-print media, and predominately aimed at adults. The idea of this project is therefore to develop a web-based app, which enables children between the ages of 6 and 12 to learn about the Rights of the Child in a playful and interactive manner, as well as to provide vulnerable and endangered groups with the opportunity to inform themselves about their rights, as well as to obtain possible contact points.
/web/2021/10-210705-29

Marketplace Lending Report

(Lucerne University of Applied Sciences and Arts, July 20, 2021)

A team of researchers from the Lucerne University of Applied Sciences and Arts, together with the Swiss Marketplace Lending Association and the TMF Group, recently published the first comprehensive analysis on online financing solutions in Switzerland, which in particular illustrated that new technologies, as well as the low interest rate environment and changing customer behavior, are not only eroding some of the banks' core competitive advantages, but are also leading to the emergence of new, potentially disruptive, business models. In this context, authors Simon Amrein and Andreas Dietrich for example highlighted that crowd-lending platforms were among the first to provide mainly digital lending processes for SMEs and consumers in Switzerland, as well as that platforms for lending to public entities already captured a substantial part of this market segment in 2016.
/web/2021/10-210720-9d

11. Start-ups / Technology Transfer / IPR / Patents

Tech4Dev Grantees 2021

(EPFL, June 04, 2021)

The following four projects were recently announced as the latest Tech4Dev grant recipients, which aims to support initiatives that address the specific needs and living conditions of communities in the developing world: an electricity free based coldbox for vaccine and food storage in rural area, a participatory GIS toolkit for transportation needs assessment in rural areas, a low-cost solution for cervical cancer screening, and a computational design for resilient shelters. In order to help them achieve their goals, each of the selected projects will receive funding of up to CHF 300k over two years – at least 40% of which must be disbursed in the developing country in question.
/web/2021/11-210604-a9

Startup Days 2021

(startupticker.ch, June 25, 2021)

More than 700 players from the Swiss startup ecosystem were recently brought together during this year's Startup Days – 600 of which attended physically – to explore, learn and get insights on trending topics discussed through 57 sessions with over 155 speakers. In addition to the discussions and 400 1:1 meetings, the Startup Days also held a pitching competition, which enabled 50 startups to present their solutions to the audience, which subsequently crowned the following startups as the winners of their respective verticals: Isochronic AG (autonomous systems), anavo medical (healthtech), Impossible Materials and Swistor (both for sustainable-tech), Kaspar& (fintech) and IDUN Technologies (services).
/web/2021/11-210625-c3

Female Innovation Forum

(startupticker.ch, July 05, 2021)

The fourth annual "Female Innovation Forum" recently brought together 200 individuals to exchange ideas on a wide range of topics, and was subsequently concluded with a gala dinner, which in particular recognized the following three founders for their exceptional achievements: Melanie Gabriel, who, together with four colleagues, founded the all-in-one spend management platform "Yokoy", won the "Innovator Of The Year" award. Sabine Wildemann was awarded the "Recognition" award for "KidsCircle.io" – a provider of flexible, digital childcare solutions for children aged 4+. Sister Ariane received the first "Social Innovator Of the Year" award for her work with the Incontro association, which offers German courses, assisted living, and a restaurant in which the needy are served warm meals.
/web/2021/11-210705-1f

ImpactLabFHNW

(University of Applied Sciences and Arts Northwestern Switzerland, July 13, 2021)

The successful pilot-phase of the ImpactLabFHNW – a new accelerator initiated by the University of Applied Sciences and Arts Northwestern Switzerland (FHNW), which aims to support innovative business ideas that were developed by students and focus on digital solutions and sustainability – recently concluded with a virtual pitching session, which in particular recognized McomTech with the "Most Convincing Business Model Award." Composed of Niklas Meindl, Leon Geser and Janick Fischer, the team developed a messaging e-commerce solution that streamlines and automates the information flow, as well as provides detailed insights on user behavior. In addition, the pitching event also featured the following runner-up projects: Droomsy (Patrick Collet), Noonli (Rohit Shrivastava), spontastic AG (Jürg Samuel Gnos) and SiVU (Maurizio Gullo).
/web/2021/11-210713-c2

Venture Leaders Biotech 2021

(Venturelab, July 14, 2021)

The following ten startups were recently selected for the premier Venture Leaders program dedicated explicitly to the biotech sector, which will enable them to meet international investors and industry leaders, as well as to access industry-specific expertise and networks to grow their companies: Acthera Therapeutics (Carlo Bertozzi), Alithea Genomics (Riccardo Dainese), Avrion Therapeutics (Maximilien Murone), cellvie (Alexander Schueller), deepCDR Biologics (Simon Friedensohn), Gnubiotics Sciences (Yemi Adesokan), HexagonFab (Christoph v. Bieberstein), Nemosia (Awa Diagne), NextImmune (Rajesh Jayachandran), and STALICLA (Lynn Durham). Venture Leaders Biotech 2021 is co-organized by Venturelab and Swissnex and supported by EPFL, ETH Zurich, VISCHER, and the Canton of Zurich.
/web/2021/11-210714-5b

Support for University of Applied Sciences Spin-Offs

(startupticker.ch, July 14, 2021)

The "First Ventures" program, which is organized by the Gebert Rüf Stiftung, recently supported the following University of Applied Sciences students with funding and individually-tailored coaching to help transform their ideas into a startup: Sarah Harbarth (FHNW) aims to develop a biodegradable and sustainable alternative material from banana peels and a biopolymer; Cécile Lê & Jean-Phillippe Fonsalas (HES-SO) aim to design an adaptable piano hammer press; Aurélien Ducrey (HES-SO) aims to produce a local and upcycled protein concentrate from the co-products of the brewing industry; Rominga Büchler & Marc Papritz (OST) aim to develop an eco-friendly packaging material based on mushroom substrates; and Fabio Fitz & Michael Haldimann (BFH) aim to develop a revolutionary body-weight support system designed for therapeutic and handicap climbing.
/web/2021/11-210714-39

12. General Interest

SNSF Launches Pilot Project With ChronosHub

(Swiss National Science Foundation, June 15, 2021)

The Swiss National Science Foundation recently entered into a pilot partnership with the service provider ChronosHub, which will enable researchers to publish their open-access articles using its platform. This is an encouraging development, as in the case of an OA-only journal, payment of the fees is arranged directly without the researchers having to submit an application to the SNSF. As expressed by SNSF President Matthias Egger, "thanks to access to ChronosHub, we are taking an important step on the road to 100% Open Access," thereby further reducing the time and effort involved for researchers. ChronosHub will also provide researchers with access to more than 40,000 journals via the "Journal Finder" search engine, and articles published via ChronosHub are archived on the platform, thereby enabling them to be reused for reporting, e.g. to the SNSF.
/web/2021/12-210615-c5

New Center for Imaging Technology in Research

(EPFL, June 16, 2021)

EPFL recently opened a new "Center for Imaging" (ECI), which aims to facilitate cross-disciplinary research and anchor EPFL's position at the cutting edge of imaging technology for research applications. Specifically, by serving as an incubator for new research ideas and favoring the reliance on shared expertise, tools, and resources, the ECI aims to accelerate new discoveries in imaging and their translation to

applications. To achieve this, the ECI will pool the imaging expertise that is currently housed at nearly a hundred laboratories in five EPFL schools, thereby serving as a common entry point for all researchers active in imaging, as well as for addressing the needs in image handling and analysis of EPFL's imaging community. The ECI also aims to promote open science practice in the field and to attract and train students to acquire world-class expertise in imaging.
/web/2021/12-210616-ff

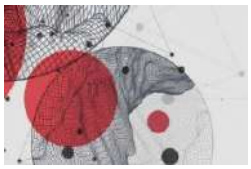
Intuitive Search Engine for Scientific Datasets

(Zurich University of Applied Sciences, June 29, 2021)

As part of the Project INODE, which is funded by the EU's Horizon 2020 research program, a team of Zurich University of Applied Sciences researchers led by Professor Kurt Stockinger recently developed an intuitive search function that responds to questions in natural language. This in turn greatly improves general accessibility to research results, as individuals no longer need to submit queries to the search engine in a database language, but rather, can ask questions in a similar way to how they talk to other people. This could also prove to be very helpful for researchers, as it could, for example, enable doctors in cancer research to easily find certain bioinformatics data that influence the success of therapies, or astrophysicists to locate specific shifts in the positions of stars.
/web/2021/12-210629-56

Science Communication in Switzerland

(Swiss Academies of Arts and Sciences, July 15, 2021)



The "Communicating Sciences and Arts in Times of Digital Media" expert group, which was set up by the Swiss Academies of Arts and Sciences, recently published the first comprehensive assessment report on science communication in Switzerland. Overall, the report paints a positive picture of the Swiss situation, as underlined by several studies, which found that the Swiss population generally has a positive perception of science and that trust in science is widespread. Moreover, scientist in Switzerland largely agree that science communication is important, thereby leading them to be willing to engage with the public. However, the report also highlighted several challenges that need to be addressed, such as insufficient support for researchers communicating with the public, the erosion of science journalism, and the spread of fake news
/web/2021/12-210715-9b

13. Calls for Grants/Awards

National Data Streams for a Personalized Health Ecosystem

(Swiss Personalized Health Network, June 16, 2021)

In order to support the establishment of a Swiss personalized health ecosystem, the Swiss Personalized Health Network (SPHN) and the ETH Strategic Focus Area "Personalized Health and Related Technologies" recently launched a joint call for proposals for National Data Streams (NDS), which will provide funding to multidisciplinary consortia that invest in sustainable and reusable health-related data infrastructure development, in conjunction with high-end research. The call is open to applicants from all disciplines of data-driven health research and an NDS (including its infrastructure and research) is envisaged to be funded for up to 36 months with a maximum total amount of CHF 3-5 million. The deadline for proposal outlines for is 22 August 2021.
/web/2021/13-210616-0c

Call for Research Partnership Grants

(ETH Zurich, July 05, 2021)

The Leading House Asia recently launched its 2021 call for "Research Partnership Grants", which supports research projects with collaborating institutions in China (incl. Hong Kong and Taiwan), Japan, South Korea and ASEAN member states. Specifically, this instrument aims to enable researchers to conduct feasibility studies or pilot projects in order to give them the opportunity to subsequently apply for grants from larger funding agencies, while simultaneously building on existing collaborations projects between researchers and scientists affiliated to a Swiss institution and researchers from the partner country. The call is open to all scientific disciplines and fields of research, and the deadline is 30 September 2021.
/web/2021/13-210705-a4

BRIDGE Proof of Concept Call

(BRIDGE, July 08, 2021)

The Swiss National Science Foundation and Innosuisse recently launched a new call for proposals for the BRIDGE "Proof of Concept" program, which aims to help young researchers to apply their research results and gain the confidence needed to make a market entry. The BRIDGE Proof of Concept funding scheme is open to applicants from all disciplines who want to independently conduct and manage a project at a Swiss higher education research center, and who obtained a Bachelor's, Master's, or doctoral degree that is recognized in Switzerland within the past 4 years. Successful applicants can subsequently receive up to CHF 130k per year for a maximum of 18 months to cover their salary, as well as any other costs that are directly linked to the execution of their project. Deadline: 6 September 2021.
/web/2021/13-210708-7e

H.I.T. Program 2021-24 for Female Professors

(University of Zurich, July 29, 2021)

The University of Zurich recently launched a call for applications for the first round of the H.I.T. program – a unique leadership initiative for female professors in Switzerland, which ultimately aims to prepare participants for senior academic leadership roles in the future. To achieve this, the program – which will be offered in a blended format consisting of 4 1-day in-person sessions and 2 1/2-day online sessions – features several training modules and workshops led by internationally-known experts in academic leadership, as well as individual coaching, professional networking, peer mentoring and leadership shadowing. 20 places are available for female full and associate professors from all partner universities, which includes all 10 cantonal universities and the two federal technical universities. Application deadline: 20 August 2021.
/web/2021/13-210729-b4

SNSF Project Funding Call

(Swiss National Science Foundation, July 30, 2021)

The Swiss National Science Foundation (SNSF) recently opened applications for its "project funding" scheme, which enables qualified researchers from all disciplines to independently conduct research projects with topics and goals of their own choice. The funding period ranges from one to four years, with grants starting at CHF 50,000 (minimum amount). Applicants can apply for funding of research costs and staff salaries, as well as of scientific cooperation, networking, and communication; however, they may not apply for their own salaries. Applications must be submitted by 1 October 2021 and the SNSF recommends that researchers focus on one project and plan it for a four-year period.
/web/2021/13-210730-73

Upcoming Science and Technology Related Events

Swiss Public Health Conference
August 25-26, 2021
https://is.gd/p22yZS
Health, Society, Economy, Covid-19
Bern

Swiss Economic Forum
September 1-2, 2021
https://is.gd/1Uyk47
Business, Startups, Networking
Interlaken

Swiss Green Economy Symposium
September 2-3, 2021
https://is.gd/sP0iEn
Sustainability, Business, Innovation
Winterthur

Swiss Biotech Day
September 7, 2021
https://is.gd/iYU8Ju
Biotech, Manufacturing, Innovation
Basel

Top 100 Swiss Startup Award
September 8, 2021
https://is.gd/Kft40q
Startups, Deeptech, Innovation
Zurich

Swiss Medtech Day
September 8, 2021
https://is.gd/kW5AHg
Healthcare, Digitalization, Networking
Bern

World Sustainability Forum
September 13-15, 2021
https://is.gd/Gw5P2D
Business, Climate, Health, Education
Online

Swiss Startup Conference
October 19-20, 2021
https://is.gd/DNRxKH
Startups, Investors, Networking
Online

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