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Science-Switzerland, February – March 2024

News on Swiss science, technology, education and innovation

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New Catalysts Being Developed with the Help of AI

(ETH Zurich, February 21, 2024)

A pioneering project led by Dr. Paco Laveille and Prof. Dr. Christophe Coperet at the Department of Chemistry and Applied Biosciences at ETH Zürich, has made advancements in sustainable fuel and chemical production, thanks to a new technique for developing catalysts. Utilizing robotics and AI in the project, Copéret's team developed an efficient catalyst using cheaper metals like iron, copper, cobalt, and a blend of additional elements. The research enabled the design and production of catalysts and provided reproducible data with the help of AI. The unraveled catalyst breakthrough will not only fill an existing gap in the sustainable energy sector reactions but also lead the way for more advanced research in this field.
/web/2024/08-240221-59

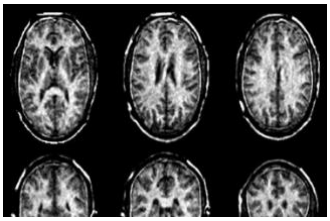
An Immunotherapy to Overcome Resistant Leukemia

(University of Zurich, March 25, 2024)

A groundbreaking discovery has been made by Prof. Dr. Steffen Böttcher and Prof. Dr. Markus Manz from the Clinic for Medical Oncology and Hematology at the University of Zurich and University Hospital Zürich. They have uncovered how a mutation in the cancer cells of aggressive leukemia can prevent novel immunotherapies from working. This important study looked at how CAR T-cells work and focused on the role of tumor suppressor gene TP53. It suggests ways to make CAR T-cells better at fighting cancer, using medicine alongside or genetically improve them. This heralds potential new paths to combat resistance to immunotherapies in aggressive blood cancers like acute myeloid leukemia.
/web/2024/03-240325-e4

Visualizing Multiple Sclerosis with A New MRI Procedure

(ETH Zurich, February 06, 2024)



Researchers Markus Weiger, Emily Louise Baadsvik, and their team from ETH Zürich have advanced medical imaging in the field of multiple sclerosis (MS). Their achievement lies in the development of an innovative MRI procedure using a customized head scanner that has far-reaching implications for the diagnosis and study of MS. This particularly powerful MRI procedure employs a uniquely strong gradient in the magnetic field, enabled by a strong current and a specially designed system to concentrate and contain the field. This leads to rapid, short-T2 imaging, making it possible to visualize myelin in the human brain in vivo – a critical factor in understanding MS pathology. Following successful tests on tissue samples from MS patients and healthy individuals, the team is now proceeding to live testing. This revolutionary technique is poised to shift the paradigm in MS diagnosis and monitoring, marking an instrumental step towards precision-driven patient care.
/web/2024/03-240206-a3

1. Policy

Hydropower is a Cornerstone of Renewable Energy

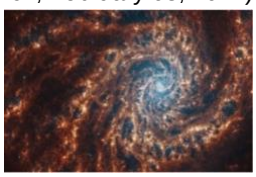
(EPFL, March 29, 2024)

EPFL has spearheaded the XFLEX HYDRO program, led by Dr. Elena Vagnoni and Prof. Dr. Mario Paolone, to revolutionize hydropower systems' flexibility without increasing costs. This groundbreaking initiative has developed cutting-edge technologies like hydraulic short circuits, enabling instant switching of operations at pumped-storage plants. Through extensive research on optimizing existing equipment, analyzing stresses in dynamic conditions, and exploring fluid mechanics and flow control systems, the program has successfully tested and implemented mechanisms at various hydropower plants across Europe. These advancements are crucial as hydropower accounts for a significant portion of the world's electricity, and enhancing its flexibility can support the growth of other renewable energy sources like solar and wind farms.
/web/2024/01-240329-30

2. Education

Launch of New Master's in Space Systems at ETH Zurich

(ETH Zurich, February 08, 2024)



ETH Zürich announces the launch of a much-anticipated Master's degree program in Space Systems. This unique program will be focused on commercial space research, and aims to offer students comprehensive knowledge of space systems, encompassing aspects beyond the familiar like satellites, launch vehicles, telescopes, and spacecraft. Emerging from a collaboration of the departments of Earth Sciences, Physics, Mechanical and Process Engineering, and Information Technology and Electrical Engineering at ETH Zürich, this program will offer aspirant students compelling interdisciplinary exposures in space engineering, communication, robotics, earth observation, and planetary sciences. The program anticipates the demand surge for skilled professionals in the booming space industry, expecting a threefold rise in global investment by 2040.
/web/2024/00-240208-59

3. Life Science

Firing Nerve Fibers in the Brain Are Supplied with Energy on Demand

(University of Zurich, February 01, 2024)

A team led by Dr. Zoe Looser from the Institute of Pharmacology and Toxicology at the University of Zurich, has unveiled a pioneering breakthrough in comprehending how nerve fibers in the brain receive required energy. The study spots oligodendrocytes, specialized cells insulating nerve fibers, as key players in providing energy to activated nerve fibers, guided by electrical signals. Executing research on genetically modified mice, the team discovered potassium, released by active nerve fibers, as the prominent signal prompting oligodendrocytes. Missing a certain potassium channel, referred as "Kir4.1", led to reduced glucose metabolism in nerve fibers and escalated axonal damage in aging mice. This breakthrough is cornerstone to advancing the understanding of brain functionality, with potential to shed light on neurodegenerative diseases.
/web/2024/03-240201-af

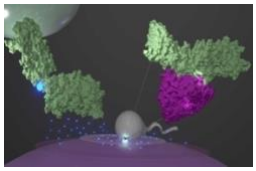
Resistant Bacteria Can Remain in the Body for Years

(University of Basel, February 02, 2024)

Under the helm of Prof. Dr. Sarah Tschudin Sutter and Dr. Lisandra Aguilar-Bultet from the Department of Clinical Research at the University of Basel and University Hospital Basel, a study has revealed important insights into the behavior and longevity of resistant Klebsiella pneumoniae and Escherichia coli bacteria within the human body. The research, which analyzed samples from over 70 individuals over a decade, discovered that these resistant bacteria could still be detected up to nine years later. This highlights how these patients can serve as long-term reservoirs for these pathogens. Moreover, they found out that even different species could share identical genetic resistance mechanisms, hinting at an intra-species transmission of these resistant traits.
/web/2024/03-240202-1b

Scientists Successfully Stimulate Protein Complex that Initiates Fertilization

(ETH Zurich, February 02, 2024)



A cutting-edge research study conducted by Prof. Dr. Viola Vogel's team, including first author researcher Dr. Paulina Pacak, at ETH Zürich, has pioneered a ground-breaking understanding of the human fertilization process. Utilizing sophisticated simulations, this team has bridged important knowledge gaps surrounding the dynamic protein complex involved in fertilization. Thanks to the state-of-the-art resources of CSCS (Swiss National Supercomputing Centre), the team was able to conduct intricate in-silico experiments. They observed the behavior of proteins JUNO and IZUMO1 in an aqueous solution, taking into account interactions with water molecules. This novel technique has shed light on the complex connection between germ cells, a process previously veiled in scientific mystery.
/web/2024/03-240202-32

Unraveling Ancient Genetic Parasites in the Human Genome

(EPFL, February 02, 2024)

Led by Prof. Dr. Didier Trono, a team of scientists at EPFL made a groundbreaking revelation within the understanding of our genetic past. Their research, with resounding implications and possible applications, uncovers ancient genetic parasites within transposable elements (TEs) of the human genome. The methodological innovation behind this discovery involved reconstructing ancestral genomes in order to identify previously undetectable degenerate TEs. This papers the way for a deeper appreciation of evolutionary history and functional importance of these elements in our DNA. The potential for applications spans from diagnosing and treating cancer, autoimmune disorders, to metabolic anomalies and evaluating the body's response to environmental stressors and aging.
/web/2024/03-240202-4a

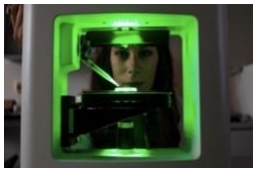
Study Reveals Fly Species Acquired Bacteria Genes Through Evolution

(University of Neuchâtel, February 05, 2024)

A groundbreaking study led by Professor Ted Turlings at the Université de Neuchâtel, in collaboration with the Chinese Academy of Agricultural Sciences, uncovered a fascinating aspect of the whitefly, Bemisia tabaci. The research offered insights into how this major agricultural pest has acquired two bacterial genes, enabling it to control its nitrogen cycle, essential for growth and reproduction efficiently. This unique genetic transfer from a bacterium to an advanced organism, like an insect, echoes the fundamental role of evolution. The discovery and functional understanding of the two genes offer an understanding of the whitefly's ability to devastate a broad range of plant species. The study points out the uniqueness of these genes in whitefly's survival strategy, bolstering our knowledge on the pest's ability to acquire plants' functional genes and safeguard against plant toxins.
/web/2024/03-240205-e5

How Red Blood Cells Deform

(EMPA, February 07, 2024)



Empa researcher Dr. Peter Nirmalraj has made a significant breakthrough in the field of bio-imaging. His team has effectively used holotomographic microscopy to study drug molecules' interaction with the cell membrane on red blood cells. The study witnessed a real-time transformation of living red blood cells into spiky "echinocytes" when treated with high concentrations of ibuprofen. This outstanding scientific achievement, powered by digital holotomographic microscopy, generated high-resolution, non-contact, marker-free images converted into three-dimensional representations. The importance of this research lies in its unprecedented insights into how drug molecules interact with cell membranes.
/web/2024/03-240207-1b

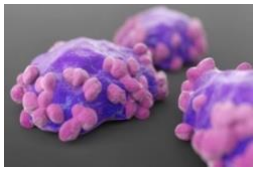
Stress Influences Brain and Psyche Via Immune System

(University of Zurich, February 09, 2024)

An international cross-discipline team from the University of Zurich, the University Hospital of Psychiatry Zurich (PUK), and the Icahn School of Medicine at Mount Sinai, New York, led by Dr. Flurin Cathomas, has achieved a groundbreaking revelation in understanding how chronic stress impacts the brain and psyche. The research, through studies on mice and corroborated by changes observed in patients with depression, showed that stress boosts the matrix metalloproteinase-8 (MMP-8) enzyme in the blood. This groundbreaking finding underscores the integral role of the immune system in the progression of psychiatric disorders, underscoring the need for a holistic mind-body approach to psychiatric treatment.
/web/2024/03-240209-e1

Discovery of Proteins Helping Cancer Cells Evade Immune System

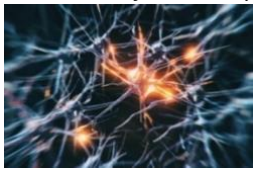
(EPFL, February 14, 2024)



Researchers from EPFL led by Didier Trono, in collaboration with Stanford University, the Institut Curie, Cornell University, the Van Andel Institute, and Barts Cancer Institute, have made a significant breakthrough. They've disclosed a critical survival tactic of cancer cells involving "KRAB zinc finger proteins" (KZFPs), which assist cancer cells in maintaining genetic stability and dodging immune system detection. Utilizing a cluster of KZFPs, the team evaluated their role in protecting cancer cells from stress-induced inflammation. This research unveils the proteins as vital safeguards against the loss of epigenetic controls, subverted by cancer to bypass immune surveillance. The research provides novel targets for Diffuse Large B Cell Lymphoma therapy, marking a strategic research avenue towards which funding is currently being raised, foreseeing transformative clinical implementations.
/web/2024/03-240214-9b

Protein Modifications Key Influencers in Neurodegenerative Diseases

(EPFL, February 17, 2024)



New research unveils the instrumental role of a specific protein modification, O-GlcNAc, in influencing the pathogenicity of alpha-synuclein, a protein affiliated with neurodegenerative ailments. This groundbreaking work was carried out by Prof. Dr. Hilal Lashuel and the first author, Dr. Anne-Laure Mahul-Mellier from EPFL, in collaboration with the University of Pennsylvania. The researchers used pioneering chemical methods to create modified alpha-synuclein fibrils and employed cellular and animal models to analyze the impact of O-GlcNAc on the pathogenic attributes of alpha-synuclein. This study could potentially pave the way for novel treatments that alter protein aggregate properties and inhibit their growth in the brain, leading to a slowdown in disease progression.
/web/2024/03-240217-9f

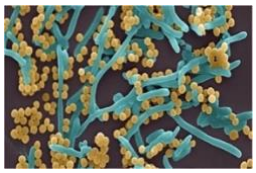
What Bulls Can Tell Us About Infertility in Men

(ETH Zurich, February 17, 2024)

Led by Professor Hubert Pausch from ETH Zürich's Institute of Agricultural Sciences, including primary author Xena Mapel, an insightful research into animal genomics has been conducted. The study shed valuable light on the genes affecting bull fertility which, in the long-run, could have tangible implications for human male fertility too. The team examined the reproductive organs of 118 bulls, profiling the active genes in each tissue. The result disclosed a substantial number of fertility-related genes. Besides paving the way for enhancing the diagnostics and genetic analysis in bull breeding, this discovery could potentially reduce financial setbacks for livestock breeders and unravel new avenues in male fertility studies across mammals.
/web/2024/03-240217-65

Innovative Materials to Combat Bacteria

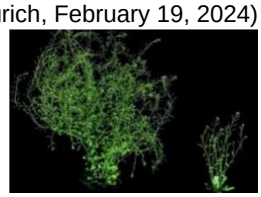
(University of Geneva, February 19, 2024)



A cross-disciplinary team of researchers at the University of Geneva, led by full Professor Dr. Christoph Renner, is making notable strides in developing alloys capable of attracting and destroying bacteria in a targeted manner. Through the amalgamation of techniques gleaned from electronic materials research and metallurgical writing technology, the team has successfully created innovative surfaces capable of aiding in bacterial elimination — a significant stride towards improved healthcare outcomes. Not only does this discovery address a public health concern; it also opens possibilities for wider applications in various medical settings, including marking surgical instruments and implants.
/web/2024/03-240219-82

Breakthrough in Asexual Propagation of Crop Plants

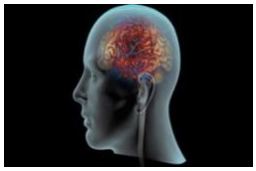
(University of Zurich, February 19, 2024)



A recent research endeavor led by Sara Simonini from the University of Zurich has made a remarkable breakthrough in the asexual propagation of crop plants. Simonini's research was centered around a thale cress plant, genetically modified to enable the division of cells without fertilization. This novel discovery breathes life into the potential to propagate crop plants without the need for fertilization, specifically in hybrid variants which are known for their increased resilience and yield. By understanding and controlling the protein triggers that interrupt the cell cycle in the central cells of plants, the possibility for more efficient and sustainable farming practices, particularly for small-scale farmers.
/web/2024/03-240219-70

Innovation in Diagnosis of Alzheimer's Disease

(University of Geneva, February 20, 2024)



A team of researchers from the Geneva University Hospital (HUG), the University of Geneva (UNIGE), and the Fatebenefratelli of Brescia National Research Center for Alzheimer’s Disease (IRCCS) led by Prof. Giovanni Frisoni have pioneered a patient-centric diagnostic pathway for Alzheimer's disease. This novel pathway represents a major shift from current disease-or-test-focused procedures, revolutionizing Alzheimer's diagnosis standards. The research conducted, in collaboration with experts from eleven European scientific entities and Alzheimer Europe, involved deploying the Delphi participatory approach to comparing the efficacy of various Alzheimer's diagnostic tests. This new consensus will enable clinicians to pinpoint the most informative biomarker in typical clinical scenarios, facilitating consistent diagnosis across Europe, lowering analysis costs, and enhancing treatment precision.
/web/2024/03-240220-2c

New Link between Inflammation and Metastasis in Breast Cancer

(University of Fribourg, February 22, 2024)

A remarkable breakthrough in breast cancer research has been unveiled by an international team led by Prof. Dr. Curzio Ruegg from the University of Fribourg. The team, involving researchers from the University of Helsinki, University of Lausanne, and the SIB Swiss Institute of Bioinformatics at the Lausanne university hospital (CHUV), has discovered a new mechanism that links inflammation and breast cancer metastasis. Delving into the role of granulocytes in the formation of metastases, the team identified a novel sequence involving the production of oncostatin and interleukin 6. This research is imperative for cancer treatment as it may provide new horizons for modulating inflammation and devising targeted therapeutics for patients at high risk of metastases.
/web/2024/03-240222-70

Pathway to New Therapeutic Approaches for Rare Retinal Diseases

(University of Basel, February 22, 2024)

Prof. Dr. Carlo Rivolta and his Ophthalmic Genetics research group at the Institute of Molecular and Clinical Ophthalmology Basel (IOB), in collaboration with the University of Basel and the University Hospital Basel, have achieved a significant breakthrough in increasing our understanding of rare retinal diseases. The research explores the genetic basis for vision loss, discovering numerous new genes correlated with the disease. The team applied modern DNA sequencing and computational analysis, comparing the genomic material of patients and healthy individuals. By identifying the rare gene variants and faults related to retinal diseases, this research opens the door for potential advancements in treatment for these often neglected conditions.
/web/2024/03-240222-ca

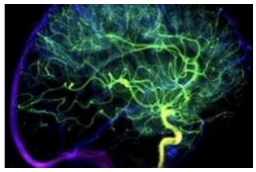
Live Music Emotionally Moves Us More than Streamed Music

(University of Zurich, February 28, 2024)

A pioneering study by researchers from the Department of Psychology, Cognitive and Affective Neuroscience at the University of Zurich led by Prof. Dr. Sascha Frühholz, showcases how live music intensifies emotional reactions within our brains. Through a meticulously designed experiment involving a real-time adaptive pianist performance and magnetic resonance imaging, the team has pinpointed the amygdala as the emotional epicenter stirred by live music. This novel research revealed that live music engages considerably higher, consistent activity in the amygdala and stimulates enhanced information exchange throughout the brain as compared to recorded music. Most interestingly, the correlation between audience brain activity and subjective emotional experience was remarkably pronounced during live performance.
/web/2024/03-240228-ce

Arterial Connections Improve Treatment Outcomes Following Stroke

(University of Zurich, February 28, 2024)



A groundbreaking study led by Prof. Dr. Susanne Wegener from the University of Zurich and Universitätsspital Zürich, backed by co-first authors Nadine Binder and Mohamad El Amki has divulged how arterial connections influence treatment results post-stroke. The research team, employing a mouse model of stroke coupled with innovative in vivo imaging methods, discovered that the outcome of stroke therapies heavily depends on a collateral network — the vessels that create additional pathways amongst arterial trees when there's a vascular obstruction. Counterintuitively, patients with poor collaterals experienced faster reperfusion, but this resulted in small cerebral hemorrhages and less favorable recovery.
/web/2024/03-240228-b2

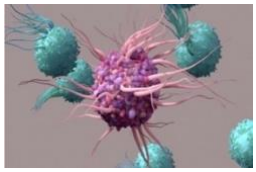
Revolutionizing UTI Treatment with Bacteriophages

(University of Zurich, February 29, 2024)

Prof. Dr. Thomas Kessler from the University of Zurich, along with his research team, have discovered a potential game-changer for urinary tract infections (UTI) treatment. The breakthrough lies in the employment of bacteriophages and its potential to usher in precision medicine treatments for bladder ailments. In collaboration with Balgrist University Hospital, Kessler's team delved into the rich panorama of bladder microbiome to spawn effective UTI treatments by exploiting bacteriophages. This pioneering research offers the prospect of safeguarding people from severe infections, and possibly formulating treatments for other bacterial infections, inflammatory diseases, and even bladder cancer, thus benefiting millions worldwide and alleviating the task on antibiotics.
/web/2024/03-240229-a3

The Switch that Keeps the Immune System from Attacking the Body

(EPFL, March 04, 2024)



EPFL scientists from Prof. Dr. Andrea Ablasser's research group, have made a new breakthrough in our understanding of the immune system. They have successfully unraveled how the key immune protein, cGAS, is regulated within different elements of our cells, demonstrating the complexity of the immune system's regulatory networks. Using cutting-edge techniques in structural biology, biochemistry, and cell biology, the research illustrated the interaction between cGAS and the protein complex CRL5-SPSB3 at an unprecedented atomic level. What occurs is an ingenious mechanism, where the protein complex systematically marks cGAS for neutralization once a threat has been dealt with.
/web/2024/03-240304-21

Better Prognosis for Blood Cancers

(University of Zurich, March 12, 2024)

Researcher Prof. Dr. Thorsten Zenz and his team have made significant strides in the combat against blood cancer. Involving a partnership between the University of Zurich, ETH Zürich, the University Children's Hospital Zurich and the European Molecular Biology Laboratory (EMBL), the INTeRCePT project has developed a revolutionary detailed map of drug responses at the individual cell level. This meticulously crafted map will enable a comprehensive procedure for blood cancer treatment, aspiring to boost the response rate by a staggering 50%. Engineered over three years, the research involved a multidisciplinary team of experts ranging from medical oncology to bioinformatics. With it now entering the clinical trial phase, the study could bring about significant advancements in blood cancer treatment and personalized approaches in medicine.
/web/2024/03-240312-f0

Advancements in Measuring Susceptibility to Hallucinations

(EPFL, March 13, 2024)

EPFL's Neuro X Institute, under the keen guidance of lead researcher Dr. Louis Albert and co-author Dr. Fosco Bernasconi, has taken a significant step forward in the understanding and measurement of hallucination susceptibility, especially among patients with Parkinson's disease. Their breakthrough involves the development of an automated, objective way to evaluate hallucination susceptibility, a stark contrast to current subjective methods. Albert and Bernasconi's ground-breaking online test and technodelics environment were tested on 170 Parkinson's patients. The innovative approach not only enables more accurate, early detection of cognitive decline risks but is also more accessible, making it highly beneficial for individuals residing in remote areas or low-income countries.
/web/2024/03-240313-41

Our Deep Sleep Reveals How Cooperative We Are

(University of Bern, March 14, 2024)

Prof. Dr. Daria Knoch and Dr. Lorena Gianotti of the University of Bern, have conducted an enlightening research into the link between deep sleep and cooperativeness. Their breakthrough discovery shows that high slow-wave activity in the right temporoparietal junction (TPJ) during deep sleep leads to increased generosity and cooperation. The study involved a 'Public-Good Game' where participants had to decide upon the distribution of their 'endowment'. Those exhibiting higher slow-wave activity in the TPJ region contributed more to the common good, indicating a strong correlation between sleep patterns and prosocial behavior. This insight not only enhances our understanding of human behavior but also emphasizes that the quality of sleep in a specific brain region affects cooperativeness more than sleep duration.
/web/2024/03-240314-fb

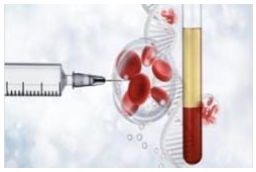
Maternal Obesity May Promote Liver Cancer

(University of Geneva, March 15, 2024)

A pioneering study conducted at the University of Geneva by Prof. Dr. Christian Toso has identified a potential link between maternal obesity and an increased risk of liver cancer development in offspring. The team analyzed the microbiome of offspring born to obese mothers, identifying potential modifications to the microbiota, and concluded that the risk of developing liver cancer was 80 percent higher. This breakthrough research is crucial as it paves the way for potential new therapies for liver cancer based on microbiome modulation.
/web/2024/03-240315-4f

Inflammatory Bowel Disease After a Stem Cell Transplant

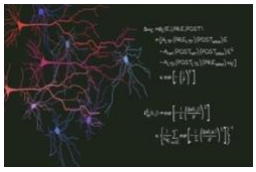
(University of Basel, March 22, 2024)



A recent study led by Prof. Dr. Petr Hruz and Prof. Dr. Mike Recher from the University of Basel and University Hospital Basel has made a significant breakthrough in understanding the triggers of Crohn's disease following a blood stem cell transplant. Their in-depth genetic analysis of an unusual case revealed that the disease originated from a mutated gene transplanted with the donor's blood stem cells. This mutation affected the function of TIM-3, a crucial immunity regulator, causing dysregulation in the recipient's immune system which subsequently led to chronic inflammatory bowel disease. Further investigation has led the researchers to propose that genetic testing of blood stem cells prior to transplantation could aid in identifying potential harmful mutations.
/web/2024/03-240322-8f

Neighboring Synapses Shape Learning and Memory

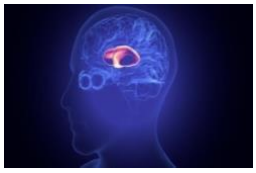
(University of Basel, March 22, 2024)



Pioneer researcher Dr. Everton Agnes from Biozentrum, University of Basel and Prof. Dr. Tim Vogels from the Institute of Science and Technology Austria navigated the labyrinth of synaptic interactions in the brain, providing a blueprint for understanding memory formation and learning processes. Their theoretical model reveals that the strength of connections and memory encoding depend on interactions between neighboring excitatory synapses. Meanwhile, inhibitory synapses bring longevity and stability to these synaptic modifications, enabling single instance learning. This model combines a vast set of rules related to synaptic co-dependency, offering a comprehensive perspective on the mechanics of brain plasticity.
/web/2024/03-240322-d6

Locating Single Neurons that Monitor and Regulate the Heart and Lungs

(EPFL, March 25, 2024)



A breakthrough in understanding body-brain communication was achieved by a collaborative effort between neuroscientist Prof. Dr. Olaf Blanke, first author Dr. Emanuela De Falco, and their team at EPFL. By using sophisticated brain recording technology during brain surgeries and monitoring single neurons' activity, they successfully observed vital physiological signals from the heart and lungs directly in the human brain. This ground-breaking study revealed how cognitive and affective processes, emotional regulation, and decision-making occur, and it suggests a significant correlation between body-brain communication malfunctions and various mental health conditions, unlocking potential avenues for advanced treatments.
/web/2024/03-240325-04

The Proteins that Shield the Body Against its Own Immune Attacks

(EPFL, March 28, 2024)

Led by Prof. Dr. Bruno Lemaitre from EPFL, an international collaboration involving Queen Mary University of London, Tokyo University of Science, Imperial College London, and the University of Geneva, has unveiled a groundbreaking discovery about how fruit flies protect themselves from self-inflicted harm during immune responses. The study identified Turandot proteins that bind to host cell membranes, particularly in the respiratory epithelium, shielding them from the damaging effects of antimicrobial peptides released by the immune system. Through techniques like electrophysiology, lipid binding assays, and molecular dynamics simulations, the researchers observed how these proteins prevent antimicrobial peptides from attacking the fly's own cells, minimizing collateral damage during an immune response.
/web/2024/03-240328-22

Fighting Heart Attack Down to the Smallest Vessels

(University of Bern, March 29, 2024)

A collaborative effort between the University of Bern, ETH Zürich, University of Zurich, and OST – Eastern Switzerland University of Applied Sciences, led by Prof. Dr. Dominik Obrist, has yielded a groundbreaking new method to address the critical issue of Microvascular Obstruction (MVO) following a heart attack. By meticulously investigating the fluid mechanics of blood flow in the heart using a model mimicking cardiac microcirculation, the researchers successfully demonstrated the diagnosis and treatment of MVO for the first time. This pioneering technique, developed by the Swiss MedTech startup CorFlow Therapeutics, holds immense potential to prevent heart tissue death after heart attack.
/web/2024/03-240329-e4

4. Nano / Micro Technology / Material Science

Why Olivine and Diamonds are Best Friends

(ETH Zurich, February 09, 2024)

A recent discovery at ETH Zürich, led by researcher Professor Andreas Giuliani in collaboration with De Beers Group, has shed light on the intricate relationship between olivine and diamonds. The team's research indicates a direct correlation between the iron-to-magnesium ratio in olivine and the diamond content of kimberlite rock, heralding significant implications for diamond prospecting and preservation. The study, primarily funded by the Swiss National Science Foundation, used careful olivine analysis to derive its findings, proving to be as reliable as previous prospecting methodologies.
/web/2024/04-240209-68

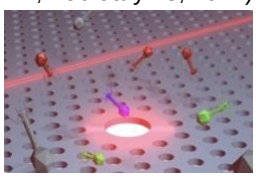
Innovative Coating Prevents Limescale Formation

(ETH Zurich, February 12, 2024)

Spearheaded by former ETH Zürich Professor Thomas Schutzius and his team, a groundbreaking study has been conducted to develop effective, eco-friendly limescale-repellent surfaces. This represents a significant step forward in the field of materials science and sustainability. The most effective coating was identified as a polymer hydrogel with a microstructure shaped in tiny ridges, reminiscent of shark scales, fabricated via photolithography. The researchers revealed that the higher the water content, the less the calcium carbonate crystals adhered to the surface. This research paves the way for a green and efficient solution to prevent limescale formation, with the potential to significantly transform current descaling protocols.
/web/2024/04-240212-ae

Nanotweezers Accelerate Phage Therapy

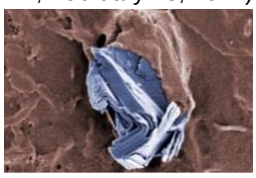
(EPFL, February 28, 2024)



Researchers Nicolas Villa and Enrico Tartari, in the group of Romuald Houdré at EPFL, along with assistance from CEA Grenoble and the Lausanne university hospital (CHUV), have engineered "nanotweezers" that can trap and distinguish different types of bacteria and virions. These nanotweezers, or minuscule light-force field traps, are set in a silicon-based optofluidic device, offering a new approach for studying potential therapeutic phages. The novel aspect of this research is the tweezers' selective detection of different phage types without chemical labels or bioreceptors, meaning faster testing and experimenting. Such a breakthrough could expedite the rollout of phage-based therapies and enhance our understanding of viruses and their interactions.
/web/2024/04-240228-7a

No Acute Dangers in Graphene Based Materials

(EMPA, February 28, 2024)



Headed by lead researchers Dr. Peter Wick and Dr. Tina Buerki-Thurnherr, the Graphene Flagship project, an international consortium of over 150 academic and industrial research teams from 23 countries, made a significant contribution towards translating the lab-based applications of graphene to the commercial market within a decade. Membership in this large collaborative project yielded nearly 5,000 scientific publications, 80 patents, and culminated in the establishment of 17 spin-off graphene-based companies, amassing more than 130 Million Euros in venture capital. More importantly, an extensive review of the health and environmental risks of graphene materials was conducted, indicating no acute cell damage in any notable organ systems.
/web/2024/04-240228-0f

Innovative Air-Filled Mattresses for Newborns

(EMPA, March 12, 2024)

Empa researchers Dr. Simon Annaheim and Dr. Luciano Boesel along with their team, the OST – Eastern Switzerland University of Applied Sciences, and the University of Bern, are developing a special air-filled mattress designed for newborns, aimed at minimizing pressure on vulnerable regions and reducing pressure sore risk. The mattress' intricate design employed pressure sensors and a microprocessor to precisely fill individual chambers, accompanied by a unique infrared laser process to fashion it from a multi-layered, flexible polymer membrane. This technology carries the potential to improve the health and well-being of newborns, especially for those with a tough start in life.
/web/2024/04-240312-c1

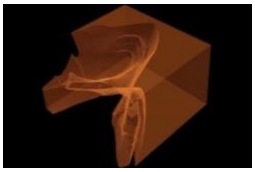
Sustainable High-Performance Plastics from Agricultural Waste

(EPFL, March 20, 2024)

A groundbreaking study has been unveiled from EPFL, led by Prof. Dr. Jeremy Luterbacher's team. They developed a pioneering new method to create polyamides, a high-performance class of plastics, using renewable resources such as agricultural waste. This significant research innovation sees sustainable carbohydrate cores leveraged to produce the polyamides, challenging the environmental difficulties associated with traditional plastic production from fossil fuels. Scaling up for this original production process is currently in progress via the EPFL spin-off, Bloom Biorenewables.
/web/2024/04-240320-38

Discovery of Link Between Crack Complexity and Material Toughness

(EPFL, March 29, 2024)

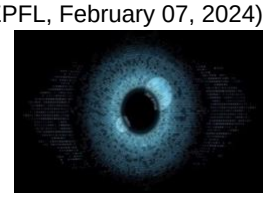


Led by Dr. John Kolinski at EPFL, a groundbreaking study has unveiled a direct connection between the complexity of cracks and the toughness of materials. By employing a confocal microscope to capture 3D crack formation in brittle solids, the researchers made a remarkable discovery: complex cracks require more energy to advance than simpler ones, establishing a correlation between crack complexity and material toughness. This pivotal finding holds great implications for the development and testing of safe composite materials across various industries, including construction, sports, and aerospace engineering. It sheds light on the crucial role of geometry in material toughness and underscores the necessity for accurate materials testing to avoid overestimating toughness.
/web/2024/04-240329-f3

5. Information & Communications Technology

New Approach to Image Data Compression Opens the Door for Enhanced Retinal Implants

(EPFL, February 07, 2024)



A pioneering research was spearheaded by Diego Ghezzi, PhD at EPFL, in cooperation with the Fondation Asile des aveugles, Hôpital ophtalmique Jules-Gonin. The team's groundbreaking accomplishment lies in the creation of a machine learning framework crafted to emulate the encoding of images by the retina, aiming ultimately to enhance data quality transmitted to the brain by retinal prostheses. The research utilized machine learning to resolve the complex issue of multidimensional image data compression, such as color and contrast, for transmission via retinal implants. They developed an actor-model framework that efficiently identified the perfect balance for image contrast.
/web/2024/05-240207-26

GPT-3 Transforms Chemical Research

(EPFL, February 08, 2024)

A pioneering study undertaken by scientists at EPFL, with lead researcher Kevin Maik Jablonka, has given way to a novel way of simplifying chemical analysis with the use of artificial intelligence. This groundbreaking research harnesses the power of the GPT-3 model to accurately answer varied chemical problems that surpass the precision of contemporary machine learning models. The implications of this study are significant. By fine-tuning GPT-3 with a small curated dataset of chemical questions and answers, researchers provide a method akin to conducting a literature search for diverse chemical problems. This allows for specific questions to be formulated and accurate answers to be retrieved, hence potentially revolutionizing how chemical research is planned and executed.
/web/2024/05-240208-20

Tackling Diagnostic Bias with New Modular AI Model

(EPFL, February 27, 2024)

Mary-Anne Hartley and a team of researchers from EPFL, the Lausanne university hospital (CHUV), Inselspital, and the University Hospital Bern have engineered an innovative model, the MultiModN, designed to tackle bias in predictions due to sparse data from low resource settings. The teams conducted clinical studies in countries like South Africa, Tanzania, Namibia, and Benin, focusing on the diagnosis of pneumonia and tuberculosis. They also trained over 100 doctors to collect multimodal data for feeding into MultiModN, which was designed to handle this complex data efficiently. MultiModN is an important development towards responsible AI implementation, particularly in low resource settings, signifying a notable breakthrough in AI for the public good.
/web/2024/05-240227-0e

Finding and Blocking Infection Routes in Hospitals

(ETH Zurich, February 29, 2024)

A joint effort between ETH Zürich's Computer Science Department, the ISI Foundation, and EPFL, has heralded a significant scientific advance. The team has developed an innovative tech to measure human contact patterns, thus enabling the identification and blocking of infection routes in healthcare facilities. The breakthrough was achieved by leveraging ultra-wideband (UWB) technology and attenuation-based proximity sensors for the on-board sensor software, and data analysis and visualization pipeline. Its importance cannot be overstated, as it significantly upgrades our abilities for epidemic preparedness and infection control in various environmental settings. Backed by Fondation Botnar and CRT Group Foundation, this technology could revolutionize the current proximity sensors, providing a higher-quality measurement of contact patterns.
/web/2024/05-240229-df

Upgrading Wind Turbine Quality Control with AI

(EPFL, February 29, 2024)

In groundbreaking research led by post-doctoral researcher Dr. Gaetan Frusque and Prof. Dr. Olga Fink from the Laboratory of Intelligent Maintenance and Operations Systems (IMOS) at EPFL, in collaboration with the University of Glasgow, a novel approach to upgrade the quality control of wind turbines using AI has been developed. This remarkable investigation involved implementing a patented radar technology coupled with AI to detect potential anomalies within the structure of wind turbine blades, both on the surface and interior. Deploying a robotic arm, the team inspected industrial wind turbine blade samples from different distances, processing the gathered data with AI algorithms.
/web/2024/05-240229-41

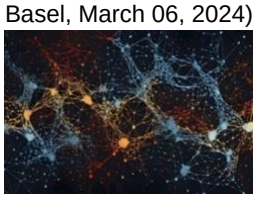
Exploring New AI Learning Methods

(EPFL, March 01, 2024)

Physicists Dr. Antonio Sclocchi and Prof. Dr. matthieu wyart from EPFL have conducted new research on artificial intelligence learning methods. Specifically, the team focused on the Stochastic Gradient Descent (SGD) process, a common staple in AI learning algorithms, and highlighted the importance of tailoring learning processes to each application's unique requirements. Investigating SGD's various regimes and effects, the study discloses that a mix of larger batches, higher learning rates, followed by exploratory steps, expedites learning but could overlook superior solutions. Conversely, leveraging detailed maps with larger batches and lower learning rates makes for a predictable learning process, but could miss optimum outputs.
/web/2024/05-240301-8f

How Artificial Intelligence Learns from Complex Networks

(University of Basel, March 06, 2024)



A team of researchers led by Prof. Dr. Ivan Dokmanić from the University of Basel conducted a study to understand how artificial intelligence learns from complex networks, particularly Graph Neural Networks (GNNs). They uncovered why GNNs act differently when dealing with similar and different types of data, essential for making and training better GNNs. The study explored the peculiar behavior of "double descent" shown by contemporary deep learning models and revealed how GNNs defy this trend. Significantly, these insights expand our core understanding of AI learning from intricate networks and offer practical guidelines for the development of more efficient neural networks that deal with real-world data. The findings could contribute to predicting traffic flows in navigation systems, fast-tracking the discovery of new antibiotics within computational drug discovery pipelines, among other applications.
/web/2024/05-240306-90

AI Detects Heart Defects in Newborns

(ETH Zurich, March 15, 2024)

Out of the Medical Data Science group at ETH Zürich, Prof. Dr. Julia Vogt and her team, in collaboration with the University of Regensburg, have made an medical breakthrough: using artificial intelligence, the team has succeeded in accurately diagnosing heart defects in newborns through ultrasound imagery. The novel AI model not only diagnoses the heart defect, but also determines the severity of the condition, providing insights into the need for specialist referral. This development could revolutionize healthcare in regions with limited specialist access. Even more remarkably, the model clarifies its diagnosis by highlighting suspicious areas within the ultrasound image, facilitating medical understanding of its criteria.
/web/2024/05-240315-dd

Revolutionary Ion Trap Opens the Door to More Powerful Quantum Computers

(ETH Zurich, March 15, 2024)

Researchers at ETH Zürich led by Prof. Dr. Jonathan Home, have made a groundbreaking advancement in constructing a new ion trap. This team engineered a Penning trap using a superconducting magnet and a microfabricated chip embedded with numerous electrodes; a pivotal development in constructing larger and more powerful quantum computers. The Penning trap permits the capturing and manipulation of individual charged particles. The team overcame previous challenges associated with Penning traps, including high-cost powerful magnets and the technical difficulty of navigating laser beams into the trap. Enhancing the potential of ion-based quantum computers, this innovation may pave the way towards the development of groundbreaking new quantum computers.
/web/2024/05-240315-d1

Faster Diagnosis of Endometriosis with AI

(ETH Zurich, March 20, 2024)

Researchers from ETH Zürich and University Hospital Zürich, led by Dr. Fabian Laumer and Dr. Michael Bajka, have made significant strides in improving the diagnosis of endometriosis. Endometriosis specialist Dr. Julian Metzler and ETH Computer Science Prof. Dr. Joachim Buhmann provided their expert support in the development of an algorithm that enables more reliable interpretation of ultrasound data for this condition. The team used AI to analyze ultrasound images of the womb, using a technique initially perfected for the heart. This promising development could revolutionize the diagnosis of endometriosis, offering faster, more accurate results.
/web/2024/05-240320-52

Large Language Models Use English Internally

(EPFL, March 20, 2024)

Pioneering research led by Prof. Dr. Robert West, conducted at the EPFL, takes an insightful look into the influence of language in large language models of artificial intelligence. The primary focal point is the predominance of English, with its inherent biases and limitations in translation and interpretation. West's team discovered that these models, trained predominantly on English data, inherently lose the subtlety of other languages, therefore promoting an English bias. This bias shapes the way we construct reality, and the terminology used has deep connections with how we conceive the world.
/web/2024/05-240320-eb

Two Artificial intelligences Talk to Each Other

(University of Geneva, March 21, 2024)

A landmark study conducted at the University of Geneva by lead researcher Prof. Dr. Alexandre Pouget, and first author Reidar Riveland, has resulted in a breakthrough in the capabilities of conversational agents utilizing AI. The research team has developed an artificial neuronal model that can translate verbal or written instructions into sensorimotor actions and explain them to another artificial intelligence. The research entailed connecting S-Bert, a language understanding model, to a simpler neuron network, creating an AI with the capacity to process language into actions without prior training.
/web/2024/05-240321-0b

Artificial Nanofluidic Synapses Can Store Computational Memory

(EPFL, March 26, 2024)

Scientists at EPFL, led by Prof. Dr. Aleksandra Radenovic, Prof. Dr. Andras Kis, Nathan Ronceray, and Dr. Théo Emmerich, have discovered a game-changing approach to nanofluidic-based neuromorphic computing. The key breakthrough was the successful execution of a logic operation using ions rather than electrons, achieved through their innovative device: highly asymmetric channels (HACs). The team fabricated these novel HACs from layers of silicon nitride membrane, palladium, and graphite — creating nano-channels designed perfectly for ions. Not only does this advancement represent a move towards more brain-inspired and efficient computing systems, it also addresses the present inefficiency of data shuttling between memory and CPU.
/web/2024/05-240326-75

6. Energy / Environment

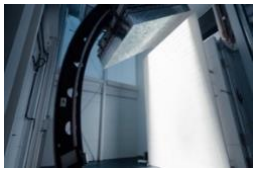
ICON Weather and Climate Model Open Sourced

(EMPA, February 02, 2024)

A collaboration led by Dominik Brunner from Empa's Atmospheric Modeling and Remote Sensing group, together with the German Climate Computing Center, the German Meteorological Service, the Karlsruhe Institute of Technology, the Max Planck Institute for Meteorology, and the Swiss Center for Climate Systems Modeling, have made available the IC-ART model code under an open source license, facilitating the estimations of methane emissions around Europe while comparing it with ground and satellite measurements. Not only will the open source IC-ART model equip collaborations with supercomputer manufacturers for testing and enhancing hardware performance using weather and climate models, but it also shows a commitment to open and transparent science.
/web/2024/06-240202-11

Artificial Sun Accelerates Test of Climate-neutral Building Materials

(ETH Zurich, February 05, 2024)



Researchers at ETH Zürich's Zero Carbon Building Systems Lab are using a device that can simulate the sun's light at any point on earth, any time of the year. Pulling knowledge from varied disciplines such as civil engineering, computer science, materials science, and architecture, the lab team, led by researchers from ETH professors Fabio Gramazio and Matthias Kohler's group, strives for a greener construction industry. The team's scientific breakthrough is the development of a semi-transparent façade constructed from printed polymer. This unique façade cleverly deflects or allows sunlight to pass based on the angle of incidence — a significant step towards reducing building-related greenhouse emissions. By considering the interaction of material, technology, and occupant behavior, this research could bring game-changing implications for sustainable and climate-neutral construction.
/web/2024/06-240205-0e

Unraveling the Truth About Nanoplastic Release from Textiles

(EMPA, February 09, 2024)

Scientists from the Technology and Society Laboratory at Empa, led by Bernd Nowack and in collaboration with colleagues from China, have conducted a pioneering study regarding the release of nanoparticles from polyester textiles. The research, first authored by Tong Yang, points out a surprising finding — not all particles that appear to be nanoplastics actually are; many are clumps of oligomers, small to medium-sized molecules. This study scrutinized twelve different polyester fabrics and the nanoparticles released during washing. The important revelation here is the realization that the potential toxicity of these oligomers is still unknown. Hence, the team plans future examinations on textiles made from renewable raw materials and the chemicals causing particles to split off from fibers.
/web/2024/06-240209-be

Uncovering Past Climate Variability

(University of Basel, February 15, 2024)

Spearheaded by Prof. Dr. Dominik Fleitmann and Ph.D. candidate Frederick Held from the University of Basel, an impressive breakthrough in understanding past climate variability has been achieved. The groundbreaking study recorded evidence of Dansgaard-Oeschger events from the last glacial period in stalagmites from Turkey — a vital window into climate behavior 100,000 years ago. By analyzing these stalagmites alongside Greenland ice cores, they have captured invaluable data on drastic past climate fluctuations or "climate hiccups." The outcomes offer essential insights for refining current climate models and predicting future trends.
/web/2024/06-240215-1a

Millions of Swiss Rooftops are Suitable for Production of Solar Energy

(EPFL, February 21, 2024)

Dr. Alina Walch, in collaboration with Dr. Martin Rüdisüli from Empa and Dr. Jean-Louis Scartezzini, have assessed the potential of expanding Switzerland's photovoltaic installation capacity in a recent study. Harnessing the power of big data and machine learning, the cross-disciplinary study analyzed the solar power potential of photovoltaic plants on building rooftops, wind turbines, and ground-connected heat pumps. The research suggests that a balanced blend of industrial and residential rooftops is the optimal path towards maximizing self-sufficiency. By strategically placing solar panels on the largest roofs, followed by a limit on additional installations, would enable Switzerland to best approach its Energy Strategy 2050 targets.
/web/2024/06-240221-33

Anticipating the Future of the climate Thanks to AI

(University of Lausanne, February 21, 2024)

A collaborative effort between scientists from the University of Lausanne and several American universities, has culminated in a breakthrough in climate science. Leveraging artificial intelligence, they have managed to enhance the generalization of weather forecast models, setting a new precedent in long-term climate predictability. Training machine learning models on extant climate data, the scientists successfully integrated robust and invariant climate modules into the current understanding of climate models. This pioneering approach indicates promising strides toward more accurate long-term forecasts and climate projections. The relevance of their study lies in the potential to enrich the knowledge of climate processes to better tackle climate change.
/web/2024/06-240221-ee

Assessing the Impact of Glacier Shrinkage on River Ecosystems

(EPFL, March 04, 2024)

Scientists from the Alpine and Polar Environmental Research Centre (ALPOLE) at EPFL, particularly the River Ecosystems Laboratory (RIVER), in collaboration with colleagues from the Vanishing Glaciers project, recently made a breakthrough in glacier-fed stream microbiome research. Led by Dr. Tyler Kohler, the team studied the structure and function of the microbiome in a glacier-fed stream in the Rwenzori Mountains, Uganda, which is undergoing profound change due to considerable glacier shrinkage. The research conducted an in-depth analysis on nutrient and enzyme amounts in the stream, noting differences compared to streams fed by larger glaciers. The study interestingly exposed the impacts of glacier shrinkage on phosphorus availability in high-mountain streams and its potential restrictions for ecosystems downstream.
/web/2024/06-240304-9e

Beer Waste Product Turned into Biodegradable Packaging Material

(EMPA, March 05, 2024)

A team led by Dr. Gilberto Siqueira and Dr. Gustav Nyström at Empa, has made a significant advancement: converting brewery waste into high-quality nanocellulose. Abundant and underutilized, beer waste product now has potential applications as innovative packaging material and in fiber-reinforced polymers. Through a carefully executed multi-step process involving bleaching, oxidation, and diverse freezing procedures, the team tailored the structure and properties of this otherwise waste product. The result is a high-quality nanocellulose with controlled pore size and orientation, which gives it excellent thermal insulation properties.
/web/2024/06-240305-bb

AI-Powered System Maps Corals in 3D in Record Time

(EPFL, March 20, 2024)

Researchers at EPFL led by researcher Jonathan Sauder have achieved a significant scientific breakthrough with the development of a novel AI-based system, DeepReefMap. This groundbreaking technology enables quick and broad classification and quantification of corals based on their health and shape, an essential advancement for conserving our rapidly deteriorating coral reefs. Utilizing semantic segmentation algorithms, the AI system, tested by amateur divers equipped with standard gear and a basic camera, monitors reef changes over time to identify high-priority conservation areas. This revolutionary research offers key insights into coral dynamics and provides robust data for monitoring large reef areas, a critical step for effective coral reef preservation strategies.
/web/2024/06-240320-e2

Decarbonizing Industrial Heat Processes

(EMPA, March 21, 2024)

Researchers at Empa, led by Dr. Christian Bach, are making a decisive breakthrough towards industry decarbonization. Their work focuses on using pyrolysis to convert methane into hydrogen, a process with significant potential to reduce industrial sector emissions, a prominent energy consumer in Switzerland. The study assesses the energy and greenhouse gas balances of the complete process while juxtaposing it with alternative methods. Despite the concept's high energy requirement, its viability remains plausible given pyrolysis-derived carbon might be marketed as a raw material for non-energy applications. This new leap in how we deal with excess carbon is connected to Empa's "Mining the Atmosphere" initiative, which hopes to repurpose atmospheric CO2 for industrial use.
/web/2024/06-240321-86

Using GPS Data to Improve Weather Forecasts

(ETH Zurich, March 21, 2024)

Driven by Dr. Benedikt Soja and Dr. Matthias Aichinger-Rosenberger, a team of researchers at ETH Zürich have turned to GPS data, setting a new pathway towards improved precipitation forecasting and detection of extreme weather events like heavy rainfall and thunderstorms. In an experiment conducted during a severe storm over Zurich on 13th July 2021, using GPS data from a station atop ETH's Institute of Geodesy and Photogrammetry, the team observed the impact of the storm on GPS signals. They found that GPS outages during the storm could be used as an indicator of extreme weather events. Reliable precipitation forecasting is one of the biggest challenges in meteorology, and the team's findings could very well lead to more accurate weather predictions and early detection of extreme weather events.
/web/2024/06-240321-3a

Climate-friendly Renovations Using Straw and Hemp

(ETH Zurich, March 22, 2024)

A study led by Prof. Dr. Guillaume Habert and Prof. Dr. Bruno Sudret from ETH Zürich, in collaboration with the University of Applied Sciences and Arts Western Switzerland and Chalmers University of Technology in Gothenburg, has outlined new ways to calculate greenhouse gas emissions and costs throughout a building's life cycle. This aims to streamline the process of determining optimal renovation strategies. Utilizing advanced computational models, machine learning, and mathematical tools like Monte Carlo simulations, the researchers have managed to factor in uncertainties related to climate change and energy prices. The significance of this study goes beyond academia: it not only offers fresh answers to sustainable renovation strategies ensuring low greenhouse emissions but can also be seen as a potential breakthrough in sustainable construction.
/web/2024/06-240322-8f

How Micro- and Nanoplastics are Infiltrating the Arctic Ice

(ETH Zurich, March 28, 2024)

Environmental scientist Dr. Alice Pradel from ETH Zürich is leading groundbreaking research that investigates the presence of micro- and nanoplastics in Arctic ice. This study aims to shed light on the transport and accumulation of these tiny plastic particles, providing crucial insights into material flows in this fragile ecosystem. Pradel's team conducts is analyzing on ice cores, scrutinizing the infiltration of micro- and nanoplastics. By comprehending these material flows within Arctic ice, researchers can better understand the environmental impact and develop strategies for conservation. This pioneering work holds significant importance as the Arctic region faces increasing pressures from climate change and pollution.
/web/2024/06-240328-2e

7. Engineering / Robotics / Space

Possible Solution to an Exoplanet Mystery

(University of Geneva, February 12, 2024)

Teams at the University of Geneva and the University of Bern, led by Julia Venturini from Technology & Innovation Platform of NCCR PlanetS at UNIGE, have made a significant stride towards understanding the internal structure and geophysical properties of water-rich exoplanets. Applying new multiscale computer simulations, researchers have been able to illuminate the interior of these enigmatic celestial bodies. Their study's significance lies in unlocking the secrets of exoplanet formation and habitability and guiding future observations of their atmospheres.
/web/2024/07-240212-1b

A New Solution for Safer Heart Pumps

(ETH Zurich, February 14, 2024)

At ETH Zürich, a team of engineers led by researchers Dr. Andreas Kourouklis and Professor Edoardo Mazza, have pioneered a new process to reduce the risk of infection when delivering power to heart pumps. Their pivotal development involves thin, flexible cables with minute craters on the surface that notably reduce the risk of infections in heart patients. The team achieved this through an innovative process that permits the creation of tiny, unique patterns on non-flat surfaces. These cables are thinly coated with silicone and refrigerated to -20°C to make the surface pliable, and then are introduced into a condensation unit where water droplets serve to create the micro-craters.
/web/2024/07-240214-6e

Advancing Neuroprosthetics for Amputees

(ETH Zurich, February 22, 2024)

A team led by Prof. Dr. Stanisa Raspopovic at ETH Zürich in collaboration with the Pavlov Institute of Physiology, has achieved a significant advancement in bio-inspired neuroprosthetics. Their groundbreaking research has led to the development of a prosthetic device capable of restoring natural sensory feedback, connected via implanted electrodes to the sciatic nerve. The intricate process involved applying pressure to a feline model's paw to study signal transmission through the nervous system. Notably, the study established bio-mimetic stimulation as superior to time-constant ones. This enhancement allows users to focus on other activities while walking and perform tasks more efficiently.
/web/2024/07-240222-4f

Detecting Life on Exoplanets

(ETH Zurich, February 27, 2024)

Spearheaded by Sascha Quanz of ETH Zürich, in cooperation with the University of Zurich, the ambitious LIFE (Large Interferometer for Exoplanets) space mission aims to detect signs of life on exoplanets. The breakthrough achieved by this study is the successful use of real instead of simulated spectra to test the future capabilities of the LIFE mission. The researchers created a mock set-up near the James Webb Space Telescope using five satellites as an interferometer to capture exoplanets' infrared thermal radiation. They then examined Earth as if it were an exoplanet, employing procedures designed for LIFE to identify concentrations of atmospheric gases and surface conditions that favor the occurrence of water.
/web/2024/07-240227-44

A DIY Guide for Turning a Conventional Microscope into a 3D Imaging Tool

(EPFL, March 05, 2024)

EPFL's Laboratory for Bio- and Nano-Instrumentation (LBNI) has released a guide to building an add-on for turning conventional optical microscopes into 3D imaging tools, capable of visualizing cells, organoids, and embryos in unprecedented detail. The unique aspect of their project, named 'OpenSIM', is the ability to convert a standard device into a super-resolution imaging tool using commercially available components. Developed with the aid of an EPFL Open Science grant, the tool has been distributed in an open-hardware format, making the technology widely accessible to labs across the globe. It exemplifies the FAIR principles of Open Science, creating cost-effective tools for research.
/web/2024/07-240305-5d

ANYmal Can Do Parkour and Walk Across Rubble

(ETH Zurich, March 15, 2024)

At ETH Zürich, joint teams led by Prof. Dr. Marco Hutter and doctoral student Nikita Rudin as the lead researcher achieved a significant advancement in quadrupedal robot navigation. Their research has successfully trained the robot, termed ANYmal, to navigate challenging terrains, essentially mastering "robotic parkour." The robot developed by ANYbotics was trained using a blend of machine learning and model-based control, with the addition of a camera and artificial neural network. This technology allows ANYmal to detect and surpass physical barriers. Such progress is considerable as it promotes the use of legged robots in diverse environments like urban spaces, disaster-stricken zones, and construction sites, a feat that previously held limitations.
/web/2024/07-240315-e9

Robotic Interface Masters a Soft Touch

(EPFL, March 15, 2024)

A research team led by Jamie Paik at the Reconfigurable Robotics Lab (RRL) of EPFL has made a significant breakthrough with the creation of the Softness Rendering Interface (SORI). The novel robotic platform can reproduce the sensation of softness for varying materials with striking precision. The research team developed SORI by decoupling cutaneous and kinesthetic cues, setting parameters for fingertip geometries and contact surfaces, and mapping these parameters onto the SORI device. The technology, built using motor-driven origami joints that can modify their flexibility, has exciting applications spanning medical training, robot-assisted surgery, space exploration, and more.
/web/2024/07-240315-0d

Enhancing Cosmic Distance Measurement with Red Giant Stars

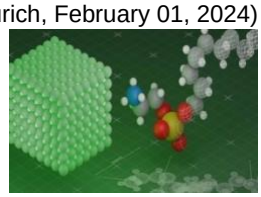
(EPFL, March 20, 2024)

A collaborative study led by Prof. Dr. Richard Anderson of EPFL, along with researchers Nolan Koblischke, and Dr. Laurent Eyer, has made strides in refining cosmic distance measurements. The research focuses on utilizing the sonorous signals from red giant stars to enhance the accuracy of these measurements using the Tip of the Red Giant Branch (TRGB) method. Detailed analysis of data from the Optical Gravitational Lensing Experiment (OGLE) and the ESA Gaia mission led the team to discover that the acoustic oscillations of red giants can significantly improve the Hubble constant measurement, potentially resolving the Hubble constant tension. Funded by various esteemed institutions, this breakthrough might dramatically alter our understanding of the basic physical processes governing how the Universe evolves.
/web/2024/07-240320-ab

8.Physics / Chemistry / Math

How to Make Bright Quantum Dots even Brighter

(ETH Zurich, February 01, 2024)



A team of researchers led by Professor Maksym Kovalenko at ETH Zurich and Empa, has achieved a revolutionary breakthrough in the brightness of perovskite quantum dots. By employing innovative chemical methods and quantum mechanical effects, they've significantly improved the brilliance of quantum dots made of lead halide perovskites - a development that has never been observed before in perovskite quantum dots. Their process involved using a surface treatment technique and developing phospholipid molecules that create a protective layer, ensuring both dispersion in non-aqueous solutions and continuous photon emission.
/web/2024/08-240201-45

Discovery of New Drug that Reduces Age-related Neuroinflammation

(University of Fribourg, February 15, 2024)

At the University of Fribourg, lead scientist, Dr. Patricia Boya and her team have made significant advancements towards reducing neuroinflammation associated with aging. Their breakthrough lies in the discovery of a specific drug treatment that activates a cell-cleaning mechanism known as mitophagy, thereby enhancing cellular health and function. Conducted on aged mice, the research involved administration of a substance known as urolithin A. The findings revealed improved cognitive, visual, and motor functions and decreased inflammation levels. This essential research opens new avenues for alleviating age-related autophagy decline leading to body dysfunction and inflammation.
/web/2024/08-240215-52

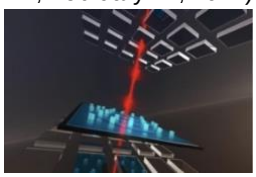
Pain Relief Without Dependence

(ETH Zurich, February 17, 2024)

In a collaborative endeavor, Professor Andrea Burden from ETH Zürich and her team from Kantonsspital Baden AG are pushing the boundaries of pharmacoepidemiology. Fundamental in their study is the responsible use of pain relief medications and the minimization of risks, such as side effects, overdose, and developing dependencies. The team has been aggregating patient data and clinical studies to potentially prevent post-discharge complications that could potentially lead to rehospitalization. This collaboration between academia and clinical practice enables impactful research, utilizes hospital resources, and underscores the importance of patient-centric care.
/web/2024/08-240217-7a

Quantum Phenomena Achieved at Room Temperature

(EPFL, February 17, 2024)



A significant breakthrough in the field of quantum physics and photonics has just been achieved at EPFL. The lead researcher of this innovative study is Dr. Alberto Beccari, based out of EPFL's Laboratory of Photonics and Quantum Measurements. The primary discovery revolves around mitigating thermal noise, which has been a long-standing challenge in quantum dynamics. Using an innovative amalgam of cavity mirrors that traps light, periodic structures akin to phononic crystals, and a mechanical oscillator, researchers managed to reduce thermal noise and detect subtle quantum phenomena at ambient temperatures. This crucial breakthrough opens up new horizons in quantum technology and communication systems, marking a significant stride towards more efficient and advanced data centers.
/web/2024/08-240217-f4

Magnetic Effects Key to Understanding Biomolecular Chirality

(EMPA, February 21, 2024)

Strides are being made in understanding the chirality of biomolecules, thanks to collaborative efforts of scientists from Empa and the Peter Grünberg Institute at Forschungszentrum Jülich in Germany. Led by Karl-Heinz Ernst, the research team uncovers the role of electric and magnetic fields in establishing the handedness of biomolecules. The research involved coating a non-magnetic copper surface with ultra-thin "islands" of magnetic cobalt and depositing spiral-shaped chiral molecules onto these islands in ultrahigh vacuum. The team unearthed evidence of chirality-induced spin selectivity (CISS effect), demonstrating that individual helicene molecules also show this unique effect.
/web/2024/08-240221-4b

Cosmic Dust and its Role in Life's Origin on Earth

(ETH Zurich, March 01, 2024)

A striking study was recently conducted at the Centre for Origin and Prevalence of Life (COPL) at ETH Zürich, led by Geologist and Nomis Fellow Craig Walton. This study offers intriguing clues into the role of cosmic dust in the inception of life on Earth, reshaping our understanding of our own origins. The team investigated the possibility of how fertile prebiotic chemistry on early Earth's glaciers could have been catalyzed by cosmic dust. This research urges us to reconsider traditional beliefs about the origins of life, especially the longstanding idea that the initial push for prebiotic chemistry was primarily due to meteorites. This invaluable pursuit signals a paradigm shift in our comprehension of our existence and urges further exploration of cosmic dust's potential influence.
/web/2024/08-240301-73

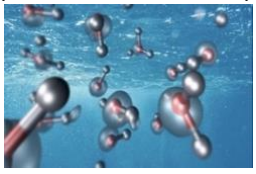
Sustainable Extraction of Gold from Electronic Waste

(ETH Zurich, March 04, 2024)

A team of researchers, led by Prof. Dr. Raffaele Mezzenga at ETH Zürich, have developed a sustainable and cost-effective method for recovering gold from electronic waste. This method is not only commercially viable, but it also addresses the growing issue of e-waste management, making it a promising breakthrough in the field. The researchers developed a sponge made from denatured whey proteins, a byproduct of cheese production. Using this innovative material in acid baths, they effectively extracted gold, with the expenses for procurement and energy being 50 times less than the worth of the gold retrieved.
/web/2024/08-240304-b2

Unraveling the Electronic Structure of Water

(EPFL, March 06, 2024)



EPFL researchers Alexey Tal, Thomas Bischoff, and Alfredo Pasquarello, have reached a scientific milestone: they have accurately decoded the electronic structure of water. This achievement is vital in understanding how water interacts with light and other substances at the molecular level. Using high-level computational methods that surpass current approaches, they have successfully determined water's ionization potential, electron affinity, and band gap. This step signifies a major advancement in the way we comprehend electronic properties of water molecules. The knowledge could revolutionize the establishment of universally applicable standards to achieve precise electronic structures of materials.
/web/2024/08-240306-27

Developing New Catalysts for CO2 Conversion into Useful Chemicals

(EMPA, March 11, 2024)

A promising development by Dr. Alessandro Senocrate and Prof. Dr. Corsin Battaglia at Empa is paving the way for innovative catalysts in CO2 conversion. His research focuses on identifying functional defects in crystalline materials. Concentrating on defects in crystalline materials which serve as unique active sites for electrochemical reactions, the research team is purposefully inducing these defects to intensify the catalytic effect. This forward-thinking technique fosters improvement in CO2 conversion systems, crucial for the creation of sustainable fuels and chemicals. Over the next four years, these findings could generate industrial-grade catalysts featuring enhanced selectivity, stability, and activity.
/web/2024/08-240311-ea

Using Light to Produce Medication and Plastics More Efficiently

(University of Basel, March 22, 2024)

A compelling breakthrough in photochemistry has been uncovered by Prof. Dr. Oliver Wenger and his team at the University of Basel. Their cutting-edge discovery has revealed a fundamental principle that markedly amplifies the energy productivity of photochemical reactions, thus expediting these processes. The researchers carried out their study by observing how radicals escape a solvent "cage" and the consequential impact on photochemical reactions. It emerged that specific dyes can liberate a higher number of radicals, thereby driving up the overall energy efficiency. Bearing significant relevance, their findings could pave the way for more eco-friendly and cost-effective manufacturing of essential products like medication, plastics, and fertilizers.
/web/2024/08-240322-69

Unraveling the Electron Dance in Water

(EPFL, March 29, 2024)

Researchers from EPFL and New York University, led by Dr. Jinggang Lan, Prof. Dr. Majed Chergui, and Prof. Dr. Alfredo Pasquarello, have achieved a groundbreaking feat by decoding the intricate dynamics of electrons in water, specifically focusing on Charge Transfer to Solvent (CTTS) processes. Utilizing aqueous iodide as a model system, the team employed ab initio molecular dynamics simulations, combining quantum mechanics principles with advanced machine learning techniques. This innovative approach allowed them to visualize and analyze the CTTS process in unprecedented detail.
/web/2024/08-240329-b7

10. Economy, Social Sciences & Humanities

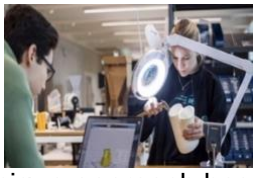
Concentration of Power in Cryptocurrencies Calls for Regulations

(University of Zurich, February 09, 2024)

University of Zurich blockchain researcher Prof. Dr. Claudio Tessone is studying the concentration of power and malfeasance within the domain of cryptocurrencies. These digital currencies were designed to subvert the monopoly of nation-states and central banks on money, but ironically, Tessone observes, they have concentrated power and created opportunities for wrongdoing. Data analysis and market trend examination on blockchain technology reveal the inherent flaws in current cryptocurrency systems. Notably, Tessone argues that the real value of cryptocurrencies does not inherently lie within the coins themselves, but rather the broader economic innovations that they have spurred. His research highlights the urgent need for laws to regulate cryptocurrencies, protecting the digital economy from fraud and malfeasance.
/web/2024/12-240209-2e

Accelerating Private Sector Innovation

(ETH Zurich, March 07, 2024)



The joint venture between Bühler Group and ETH Zürich, led by Ian Roberts, Bühler's Chief Technology Officer has pioneered a new method for accelerating innovation in the private sector. This collaboration has successfully developed vital function prototypes, paving the way for the advancement of private sector innovation. Conducted at Bühler's Innovation Campus in Uzwil, Swiss students, under the guidance of experienced project leads, work on a range of innovation projects. This unique approach has leveraged lean techniques to de-risk the development process, investing resources proportionately to the current state of knowledge to lessen uncertainty.
/web/2024/10-240307-a9

Switzerland Tops GenAI Growth Potential

(Swissinfo.ch, March 08, 2024)

According to PwC's recent analysis report, "Embracing the GenAI Opportunity," suggests that Switzerland leads among 20 industrialized countries in terms of growth potential in the generative artificial intelligence (GenAI) field. GenAI involves forms of artificial intelligence that can analyze and recreate various types of content, including text, images, and sound. According to the report, technology and software enterprises, along with media, pharmaceutical and financial companies are expected to be the main beneficiaries of this new technology. In an optimal scenario, this advanced field holds the potential to boost Switzerland's GDP by up to CHF50 billion ($56 billion) by 2030.
/web/2024/10-240308-03

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

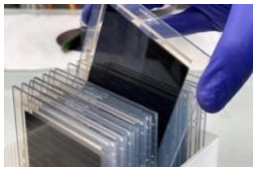
EPFL Startups Going Strong Amid Economic Downturn

(EPFL, February 13, 2024)

Startups that have emerged from EPFL's Startup Launchpad continued to showcase resilience during economic downturns and sustained growth, thanks to their innovative and tech-centric products and services. The nurturing environment and the entrepreneurship programs initiated by EPFL, which encourage an entrepreneurial spirit among students, fostered such a growth. These EPFL-connected startups scored a whopping record of CHF 470 million funding in 2023. In addition, the inaugural Investor Day, which took place in late 2023, also helped to showcase these startups born in the EPFL ecosystem.
/web/2024/11-240213-5c

Custom-Made Solar Cells Printed Digitally

(Swisstech, February 22, 2024)



A game-changing development in the field of solar cells has come straight out of the Empa. The researchers collaborated with various universities and attained a notable breakthrough in the creation of customized solar cells using perovskite materials. Their innovative approach combined nanoparticle inks with digital printing technology, enabling the efficient fabrication of solar cells of any shape and size. This is a significant milestone with far-reaching implications for IoT, medical technology, and consumer electronics. The startup Perovskia Solar AG is slated to soon start producing a million custom-designed perovskite devices annually.
/web/2024/11-240222-0c

Strengthening Switzerland's Startup Ecosystem

(ETH Zurich, March 07, 2024)

ETH Zürich, in partnership with UBS, hosted the Deep Tech Investor Summit, an impactful event promoting entrepreneurship in Switzerland. This influential networking space gathered start-up founders and potential investors, including representatives from ETH spin-off eightinks and Swisscom Ventures. The event highlighted the pivotal role of Deep Tech start-ups, based on scientific findings and technological innovations. Bart Clarysse, a Professor in Entrepreneurship at ETH Zürich, iterated the necessity of a vibrant ecosystem, entailing universities, investors, and both government and private sponsors. It truly underscored how central Deep Tech start-ups are in driving innovation and economic growth in Switzerland.
/web/2024/11-240307-89

Pioneering Gene Therapy for Muscular Dystrophy

(University of Basel, March 08, 2024)

Researchers led by Prof. Dr. Markus Rüegg from the University of Basel, in collaboration with Rutgers University, have taken a monumental stride forward in understanding muscle functions and developing therapeutics for diseases like LAMA2 muscular dystrophy. This breakthrough research revolves around the binding capabilities of the protein known as agrin with other proteins. Their fundamental research has culminated in a promising gene therapy, now housed under startup SEAL Therapeutics AG. With acquired patents and the commencement of detailed data preparation, the team is set to engage with licensing authorities and specific gene therapy pharmaceutical companies. Backed by patient organizations and foundations such as Stichting Voor Sara and the Muscular Dystrophy Association, the potential impact of this research extends hope for bolstering the fight against rare diseases.
/web/2024/11-240308-94

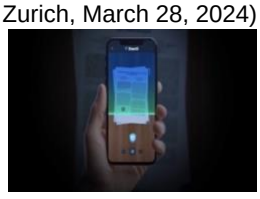
Sustainable Mobility with Biosynthetic Gasoline

(EMPA, March 11, 2024)

At the Empa research institute for materials science, lead researcher Christian Bach and his team have investigated the compatibility of synthetic fuels in classic car combustion engines. This study was conducted in cooperation with AMAG Group and used biosynthetic fuel produced from renewable methanol. The research involved comprehensive year-long testing on a VW Golf I and a Chrysler Valiant - both vintage 70s models. No relevant alterations were reported in the components, performance, or exhaust emissions when switching to the biosynthetic fuel. This study demonstrates the feasibility of climate-neutral mobility using classic vehicles. With AMAG's ongoing support for Swiss companies like Synhelion developing solar fuels, this research could significantly impact the future of sustainable mobility.
/web/2024/11-240311-df

New App Unmasks Forged Documents

(ETH Zurich, March 28, 2024)



Researchers from ETH Zürich, led by Prof. Dr. David Basin, have developed a smartphone app that can verify the authenticity of a wide range of administrative documents. Notably, the aim is to make debt enforcement registers forgery-proof. In a pilot project, the app was utilized to ensure the authenticity of entries in the debt enforcement register of the City of Zurich. The app works by comparing a filmed sequence of the document with the encrypted original stored on a server, flagging even the smallest changes in real-time. This innovative solution addresses the common issue of document forgery, and has the potential to reduce costs for enforcement offices and authorities.
/web/2024/11-240328-57

Repurposing Old Smartphones for Sustainable Buildings

(EMPA, March 29, 2024)

Dr. Hanmin Cai at Empa is pioneering an innovative approach to reduce energy consumption in buildings by harnessing the computing power of discarded smartphones. This groundbreaking research investigates the potential of utilizing self-learning algorithms and automated building systems optimized for structural characteristics and usage patterns. The startup viboo, born out of this research, has already achieved remarkable results, demonstrating a 30% energy savings through automated heating and cooling control. Initial tests have shown promising outcomes in regulating room temperature and controlling battery charging, paving the way for a future where old smartphones can be repurposed to avoid the need for new, emission-heavy hardware for building control.
/web/2024/11-240329-c9

12. General Interest

Acknowledgement of Noma as a Neglected Tropical Disease

(University of Basel, February 09, 2024)

The University of Basel and the Swiss Tropical and Public Health Institute (Swiss TPH), with lead researcher Dr. Peter Steinmann alongside PhD students Anaïs Galli and Curdin Brugger, successfully impelled the World Health Organization to list Noma as a neglected tropical disease. Their research aggregated existing data from investigations in affected countries and published studies. They updated previous understandings by highlighting Noma's expanded geographical spread into Asia and South America beyond the African belt. This recognition means Noma, which affects over 140,000 children annually, mainly in remote areas with poor healthcare, is now eligible for vital funding.
/web/2024/12-240209-b5

ETH Zurich Logistics Tool Saves ICRC Millions

(ETH Zurich, February 15, 2024)

In a collaboration between ETH Zürich and the International Committee of the Red Cross - ICRC, Prof. Dr. Stephan Wagner and Prof. Dr. Bublu Thakur-Weigold have pioneered a process to optimize the distribution of medical supplies during humanitarian crises. Their remarkable research birthed an inventory calculator that enhances the quality of caregiving in these challenging circumstances. This scientific breakthrough helps logistics planners manage financial constraints better and improve on-ground coordination between logistics specialists and health teams. This impressive tool has already accounted for financial savings of a whopping 3.6 million Swiss Francs for the ICRC.
/web/2024/12-240215-00

How Switzerland Should Maintain its Innovative Edge

(ETH Zurich, February 20, 2024)

Switzerland offers many opportunities for technological and entrepreneurial innovations, but there still is potential for further enhancements. ETH Zürich Space Science and Technology Professor, Dr. Thomas Zurbuchen, outlines three key priorities for Switzerland to strive for. First, upholding institutions that nurture innovation should be paramount, and Government-funded knowledge organizations should also proactively work to benefit Switzerland, while avoiding bureaucratic inefficiencies that could impact excellence and progress. Second, the Government-Private Sector Collaborations should be strengthened, and agility in administration should avoid hindering entrepreneurial success. Third, efforts should be made to prevent talent migration and retain locally developed innovation.
/web/2024/12-240220-7f

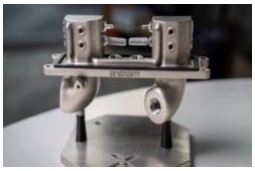
Cost of Direct Air Carbon Capture to Remain Higher than Hoped

(ETH Zurich, March 05, 2024)

A recent study by doctoral student Katrin S., along with Prof. Dr. Bjarne Steffen and Prof. Dr. Tobias Schmidt of ETH Zürich, unveiled cost prediction for future direct air carbon capture (DAC) technologies. The researchers calculated the expenses for three DAC technologies, including the process developed by Swiss company Climeworks, and projected that these technologies could cost at most between $280 and $580 per ton by 2050, rather than the often cited figure of $100 to $300 per ton. Despite the inevitable uncertainties in their computations, the researchers highlight the necessity of consistently exploring and refining carbon capture alternatives for countering climate change and curtailing greenhouse gas emissions.
/web/2024/12-240305-ca

Cause of Clogged Hypodermic Needles Discovered

(Paul Scherrer Institute, March 12, 2024)



The team of researchers led by Dr. Vladimir Novak has put forward new techniques to understand and prevent blockages in prefilled syringes. This study was also made possible by the PSI Paul Scherrer Institut and ANAXAM - Technology transfer center for advanced manufacturing, in collaboration with MSD, Dr. Margie Olbinado, Dr. David Mannes, and Dr. Christian Grünzweig. The research took an in-depth look at needles using neutron and synchrotron imaging. They deciphered potential blockage causes and set conditions to prevent future occurrences. This work is crucial considering the possible serious implications of blocked syringes for patients - impeded medication entry or insufficient dosages. The insights this study offers can enhance pre-filled syringes' safety and reliability for pharmaceutical companies and healthcare professionals.
/web/2024/12-240312-11

13. Calls for Grants/Awards

World Record for Swiss Hydrogen-Powered Train

(Swissinfo.ch, March 27, 2024)

Swiss-made Stadler Rail's hydrogen-powered train broke new grounds by covering a distance of 2803 kilometers without refueling or recharging. This achievement has earned Stadler Rail its second entry in the Guinness World Records. The triumph took place over approximately 46 hours at a testing center in Colorado, USA, with detailed evidence recorded throughout the journey. This Flirt passenger type train boasts impressive specifications, with a maximum speed of 130 km/h and extensive passenger capacity. The train also holds the world record for the longest travel distance on battery alone, which was established in 2021.
/web/2024/13-240327-c4

Upcoming Science and Technology Related Events

Women's health Innovation Summit
April 16-17, 2024
https://is.gd/NkPJsf
Life Sciences, Health Care & Medical
Congress Center, Basel

Devopsday Zurich
April 16-17, 2024
https://is.gd/cS5ren
Scientific, Research & Development
Alte Kaserne, Winterthur

Swiss IT Forum
April 18, 2024
https://is.gd/6vikvU
IT, Web & Electronic
Hotel Park Hyatt, Zurich

Swiss Biotech Day
April 22-23, 2024
https://swissbiotechday.ch/
Pharmaceutical & Biotechnology
Congress Center, Basel

UNECE Resource Management Week
April 22-24, 2024
https://is.gd/A0vaA6
Scientific, Research & Development
Palais des Nations, Geneva

International Trade Forum
April 23, 2024
https://is.gd/BfeSCn
Business & Economy
Convention Center, Zurich

Global Leadership Forum Summit
April 25-26, 2024
https://is.gd/6ESkff
Industrial Products & Engineering
Hotel President Wilson, Geneva

Advanced Prostate Cancer Consensus Conference
April 25-27, 2024
https://apccc.org/
Life Sciences, Health Care & Medical
Palazzo dei Congressi, Lugano

9th Three-Country Conference Headache
April 25-27, 2024
https://is.gd/KLFBFC
Life Sciences, Health Care & Medical
Congress Kursaal, Interlaken

IHIET-AI 2024
April 25-27, 2024
https://ihiet-ai.org/
IT, Web, Life Sciences, Health Care & Medical
Centre Hospitalier Universitaire Vaudois CHUV, Lausanne

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