



INRAE

Mai 2021

LA LETTRE D'INFORMATION DU BUREAU DU CNRS DE WASHINGTON



[EXPLOREZ NOS ACTUALITES, DES INFORMATIONS SUR LES LABORATOIRES ET PROJETS DE LA REGION AINSI QUE DES TEMOIGNAGES DE CHERCHEUR.S.E.S QUI FONT VIVRE LES COLLABORATIONS FRANCO-AMERICAINES SUR NOTRE SITE INTERNET!](#)

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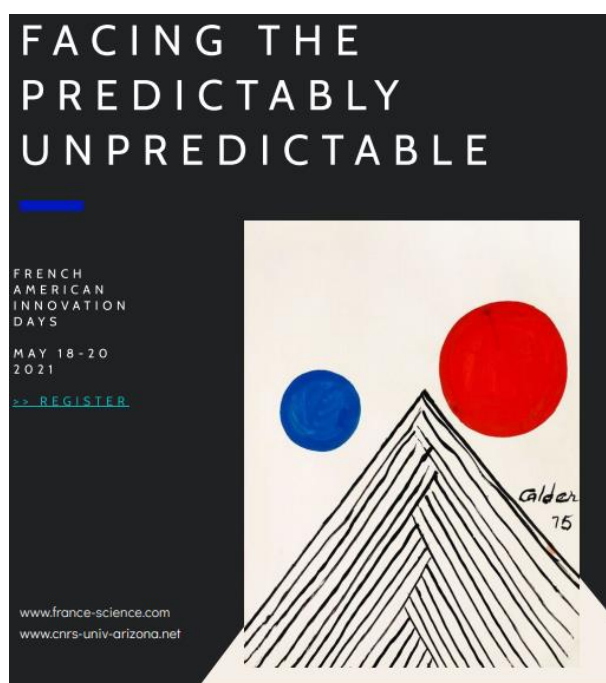
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MEXIQUE

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EN DIRECT DES ACTIONS STRUCTURANTES

En Arizona, Le CNRS co-organise le French American Innovation Days (FAID)



Les 18 au 20 mai derniers ont été l'occasion des French American Innovation Days. Sous l'impulsion de plusieurs organismes tels que le CNRS en partenariat avec l'IRL Iglobes, le Service pour la Science et la Technologie (SST) et l'Ambassade de France aux Etats-Unis, l'évènement virtuel a réuni des scientifiques du monde académique et des entrepreneurs du secteur privé autour de sujets impliquant l'innovation, la recherche et l'environnement. Sous la forme de rencontres scientifiques visant à promouvoir l'excellence des institutions de recherche françaises et américaines, le FAID a permis la participation de start-up ou d'entreprises afin de favoriser les liens scientifiques, technologiques et industriels entre les deux pays.

L'évènement visait en premier lieu à promouvoir l'excellence des institutions de recherche et des entreprises françaises et américaines impliquées dans le domaine de l'innovation, stimuler les collaborations scientifiques entre la France et les États-Unis, favoriser les interactions entre les institutions de recherche et les acteurs de l'innovation français et américains, favoriser le transfert de la recherche vers l'industrie.

Mai 2021




MAY 18th, 2021

**Acquiring data:
sensors for all
environments**



**OPENING
REMARKS**

8-8:30am
Introduction





Julie Duhaud-Geddes
Consule General of
France in Los Angeles

Joaquin Ruiz
Professor, Director of Biosphere 2,
Vice President of Global Environmental
Futures, University of Arizona

Sylvette Tournante
Director of the Office
for the USA, Canada
and Mexico, CNRS

**ACADEMIC
SPEAKERS**

8:30-9:30am:
15min presentation
& 5min Q/A

9:30-9:40am:
Breakout room session





Scott Saleska
Professor, Ecology &
Evolutionary Biology,
University of Arizona

Denis Machon
Professor (Associate),
University Lyon 1,
Visiting Professor,
Université de Sherbrooke

Roser Matamala
Terrestrial Ecologist,
AgroParis National
Laboratory

Le défi majeur du FAID consistait à identifier des « points de basculement » « tipping points » en anglais, définis par un seuil qui, lorsqu'il est dépassé, peut entraîner de grands changements dans l'état du climat. Des points de basculement potentiels ont été identifiés dans le système climatique physique ainsi que dans les écosystèmes en interaction. Des points ou des seuils à partir desquels de petits changements quantitatifs dans le système déclenchent une réaction non linéaire. Piloté par des mécanismes de rétroaction internes au système et conduisant inévitablement à un état qualitativement différent du système, qui est souvent irréversible. Cet événement se situe dans le cadre de l'IRC CNRS-Université d'Arizona intitulé : France Arizona Institute for Global Grand Challenges.

En savoir plus : <https://tinyurl.com/5m2rtdkv>

Mai 2021

Initiatives des institutions de recherche en faveur de l'environnement et de la durabilité : Echanges Franco-Américains



Dans le contexte d'urgence environnementale, les annonces d'initiatives en faveur du climat et de l'environnement se multiplient. Du 7 au 9 juin 2021, des leaders français et américains issus du monde académique et de la recherche prendront la parole afin d'évoquer leurs initiatives pionnières développées au sein de leurs institutions et partageront leur vision à plus long terme. Ils se réuniront à l'occasion d'un symposium virtuel organisé par l'Ambassade de France aux États-Unis en partenariat avec le Global Council for Science and Environment. La participation de Alain Schuhl, Directeur Général délégué à la Science du CNRS est également attendue.

En savoir plus : <https://tinyurl.com/457zfu5p>

Le programme détaillé est aussi disponible sur le site du GCSE : <https://tinyurl.com/y3hybx7j>

Mai 2021

Le département d'Humanités de l'université d'Arizona reçoit un don de 5.4 million de dollars



Debout à gauche : Le Président de l'Université d'Arizona Robert C. Robbins, les époux Dorrance et le doyen du Département d'Humanités Alain-Philippe Durand.

Les anciens élèves Jacquelyn et Bennett Dorrance ont fait un don de 5,4 millions de dollars au département des Humanités de l'Université d'Arizona. La signature en présence du doyen A.P. Durand s'est déroulée au côté du Président de l'Université Robert C. Robbins. Cette donation vise en premier lieu à soutenir les efforts pour renforcer les approches traditionnelles académiques et technologiques dans l'enseignement des sciences humaines.

En 1969, Jacquelyn et Bennett Dorrance ont tous deux obtenu une licence de français à l'université d'Arizona, mais c'est en 2012 qu'ils ont été nommés anciens élèves de l'année du département des Humanités.

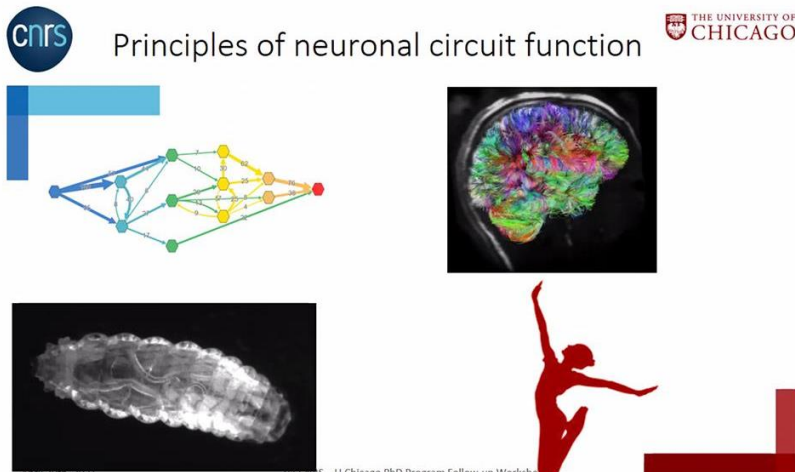
Les époux Dorrance ont soutenu la série de conférences "Humanities Innovators in a Tech World", qui présente chaque année des intervenants sur des sujets à l'intersection des sciences humaines et des technologies de pointe. La série de conférences de 2021, qui en est à sa troisième année a eu lieu le 21 mai dernier.

Sous la direction d'Alain-Philippe Durand, le collège a créé de nouvelles disciplines, des parcours académiques, augmenté les inscriptions d'étudiants, lancé des programmes de sensibilisation du public et a renforcé le réseau des anciens élèves.

En savoir plus : <https://tinyurl.com/vrecef4j>

Mai 2021

Le premier colloque « PhD program follow-up workshop » met en lumière les collaborations entre l'université de Chicago et le CNRS.





Le tout premier colloque conjoint organisé par l'Université de Chicago et le CNRS le 30 avril dernier, a mis en lumière une initiative ambitieuse qui a pour mission de financer la recherche collaborative impliquant des étudiants et des professeurs d'un large éventail de disciplines.

Cet événement s'inscrivait dans le cadre d'un partenariat permanent entre les deux institutions visant à favoriser les possibilités de recherche, d'éducation et d'engagement dans divers domaines scientifiques. Ce workshop virtuel, cherche à soutenir des collaborations dans des domaines tels que le génie moléculaire, la physique, l'informatique, la biochimie, la génétique, la biologie et les sciences sociales.

En 2019, l'Université de Chicago et le CNRS ont signé un accord de recherche conçu pour soutenir une série de programmes de recherche collaborative de trois ans pour un total de 10 doctorants par an, y compris des étudiants de l'université de Chicago et des institutions de recherche français qui accueillent une unité de recherche du CNRS. Sous la supervision de deux chercheurs l'un du CNRS l'autre de l'UChicago ce programme vise en premier lieu à aider les doctorants à acquérir de l'expérience dans la conduite de projets de recherche, et à améliorer leur formation universitaire en vue de leur future carrière professionnelle.

En savoir plus : <https://tinyurl.com/9va54aes>

Mai 2021

Témoignage de Francis Martin, chercheur INRAE, sur ses collaborations avec le Joint Genome Institute et Oak Ridge National Lab



Photographie : Réunion annuelle du projet Plant-Microbe Interfaces du Oak Ridge National Lab à l'INRAE de Nancy

Ce témoignage a été recueilli par Juliette Paemelaere auprès de Francis Martin, directeur de recherche INRAE au sein de l'Unité Mixte de Recherche IAM (Interactions Arbres/Microorganismes), spécialiste en microbiologie forestière et en génomique. Il travaille notamment avec l'Université de Californie (UC) à Berkeley, le Joint Genome Institute (JGI) et le Laboratoire national **Oak Ridge** (Tennessee) sur l'étude des relations entre les champignons et les arbres.

Son collaborateur rapproché au JGI est Igor V. Grigoriev, Directeur du programme Génomique des Champignons & Algues au JGI du Laboratoire national Lawrence Berkeley (Californie), intégré depuis quelques années à UC Berkeley.

Le laboratoire héberge le centre de séquençage du Département de l'Énergie du gouvernement américain (Department of Energy). Ce partenariat scientifique dynamique et de longue date a fait l'objet de nombreuses publications de haut niveau depuis 2006 et est aujourd'hui mis à l'honneur.

Pour en savoir plus : <https://tinyurl.com/2ws4cu92>

Mai 2021

CIFAR and the French National Centre for Scientific Research (CNRS) establish 1 M-CAD research agreement

In a memorandum of understanding signed during a virtual ceremony on May, 12th, CIFAR and CNRS agreed to work together on research projects that address issues of global importance, such as the environment, quantum computing, artificial intelligence (AI), and the microbiome, issues for which the contributions of fundamental research are indispensable to society. This agreement will bring together world-renowned researchers from both research communities to exchange ideas and knowledge. Both organizations will commit a minimum of 500,000 CAD over five years to support interdisciplinary research collaborations. The agreement amplifies existing collaborations between CIFAR and CNRS, including a series of CIFAR AI & Society workshops in 2020 that addressed societal implications of AI.

Presidents Bernstein and Petit were joined at the virtual signing ceremony by Chief Scientific Advisor Mona Nemer, Canada's Deputy Head of Mission et Ministre plénipotentiaire, Amy Baker, Canada's Chief Trade Commissioner, Sara Wilshaw, and French Ambassador to Canada, Kareen Rispal.



Pour en savoir plus : <https://tinyurl.com/2576decv>

Mai 2021

ETATS-UNIS

The trans-NIH working group on climate change and human health takes off

A new effort co-lead by Senior Scientist Joshua Rosenthal from the Fogarty International Center (part of the National Institutes of Health) and John Balbus, Senior Advisor from NIEHS (National Institute of Environmental Health Sciences) will draw on scientific expertise across the National Institutes of Health.



(Image courtesy of NIEHS)

The NIH-wide working group focuses on climate change and human health, raising issues that have not necessarily been addressed at NIH before, such as how climate change-related alterations in plants and ecosystems are affecting the nutritional value of foods and botanicals. It stems from a growing and significant interest in thinking about climate change more broadly and developing ways to harness expertise from across the institutes and centers. Indeed, six institute directors, as well as about 90 researchers and senior leaders, expressed active interest in this working group.

En savoir plus : <https://tinyurl.com/v6tp7ea5>

Four Centers of Excellence at 1890 Institutions receive USDA support to increase rural prosperity and economic sustainability of systems



The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) announced in early May 2021 an investment of \$5.76 million for four 1890 Centers of Excellence grants to 1890 land-grant institutions. The institutions receiving the award are Tuskegee University, Tuskegee, Alabama; Southern University, Baton Rouge, Louisiana; University of Maryland Eastern Shore, Princess Anne, Maryland; and North Carolina A&T State University, Greensboro, North Carolina. The Centers of Excellence (COEs) are hosted by 1890 Land-Grant Institutions, according to the Second Morrill Act.

This investment targets underserved farming communities, in an effort to increase rural prosperity and economic sustainability of their food systems. The grants will thus support projects that address critical needs for developing global food security and defense; enhance academic and career activities for students pursuing careers in food and agricultural sciences; and address vital needs in nutrition and health to improve the quality of life of underserved populations.

En savoir plus : <https://tinyurl.com/8hpeeean>

NIH to invest \$29 million to address COVID-19 disparities



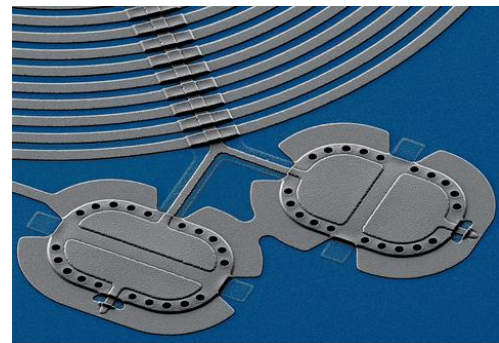
To bolster research to help communities disproportionately affected by COVID-19, the National Institutes of Health is funding \$29 million in additional grants for the NIH Community Engagement Alliance (CEAL) Against COVID-19 Disparities. This funding was supported by the American Rescue Plan. The awards will provide \$15 million to 11 teams already conducting research and outreach to help strengthen COVID-19 vaccine confidence and access, as well as testing and treatment, in communities of color. An additional \$14 million will fund 10 new research teams to extend the reach of COVID-19 community-engaged research and outreach.

Eleven research teams received \$17 million in grants in 2020 to reach residents at risk of severe COVID-19 outcomes. Spread throughout the country, CEAL research groups have used different strategies to coordinate educational outreach, raise awareness about the importance of inclusive participation in COVID-19 testing, vaccine uptake, and clinical trials, and conduct research to understand barriers surrounding prevention and treatment. CEAL researchers also study the best ways to address these challenges and establish trust in the scientific process, while equitably distributing COVID-19 resources tailored to each community.

En savoir plus : <https://tinyurl.com/2ydy67ww>

NIST Team Directs and Measures Quantum Drum Duet

Like conductors of a spooky symphony, researchers at the National Institute of Standards and Technology (NIST) have “entangled” two small mechanical drums and precisely measured their linked quantum properties. Entangled pairs like this might someday perform computations and transmit data in large-scale quantum networks.



Credit:

J. Teufel/NIST

Quantum mechanics was originally conceived as the rulebook for light and matter at atomic scales. However, in recent years’ researchers have shown that the same rules can apply to increasingly larger objects such as the drums. Their back-and-forth motion makes them a type of system known as a mechanical oscillator. Such systems were entangled for the first time at NIST about a decade ago, and in that case the mechanical elements were single atoms.

Highly entangled, massive quantum systems like this might serve as long-lived nodes of quantum networks. The high-efficiency radar measurements used in this work could be helpful in applications such as quantum teleportation — data transfer without a physical link — or swapping entanglement between nodes of a quantum network, because these applications require decisions to be made based on measurements of entanglement outcomes.

En savoir plus : <https://tinyurl.com/baftmxhc>

Mai 2021

Statement by NSF Director Sethuraman Panchanathan on the President's FY22 Budget Request



On May 28, 2021 The Biden-Harris Administration submitted to Congress the President's Budget for fiscal year 2022. As the Administration continues to make progress defeating the pandemic and getting our economy back on track, the Budget makes historic investments that will help the country build back better and lay the foundation for shared growth and prosperity for decades to come.

The Budget includes more details on what is proposed in the two historic plans the President has already put forward — the Americans Jobs Plan and the American Families Plan — and reinvests in education, research, public health, and other foundations of our country's strength. At the U.S. National Science Foundation, the Budget would:

- **Enhance Fundamental Research and Development**
- **Strengthen U.S. Leadership in Emerging Technologies**
- **Advances Equity in Science and Engineering**
- **Advances Climate Science and Sustainability Research**
- **Continues Construction of Forefront Research Infrastructure**

En savoir plus : <https://tinyurl.com/bk9vw6pd>

2021 Gruber Neuroscience Prize

The 2021 Gruber Neuroscience Prize is being awarded to neuroscientists Christine Petit, MD, PhD, of Institut Pasteur and Collège de France, and Christopher A. Walsh, MD, PhD, of Harvard Medical School, Boston Children's Hospital and the Howard Hughes Medical Institute, for their groundbreaking work in revealing the genetic and molecular mechanisms behind the development of inherited neurodevelopmental disorders.



While working separately in the 1990s, Petit and Walsh pioneered an innovative approach to identifying the genes responsible for hereditary hearing loss and disorders of the cerebral cortex: They studied the genomes of geographically isolated consanguineous families with multi-generational histories of such conditions. Then, using animal models and laboratory techniques created in their own laboratories, they went on to describe how the expression of these genes affect either the brain's processing of sound or the development of the cerebral cortex.

En savoir plus : <https://tinyurl.com/yvf6ukkm>

Mai 2021

NSF recognizes a mathematician and a social scientist with the Alan T. Waterman Award



A mathematician who uses number theory to provide new perspectives on some of the oldest and most difficult problems in mathematics, and a social scientist whose innovative contributions show the impact of increased opportunity and representation on our nation's most important decisions -- Melanie Matchett Wood, a Harvard University mathematician, and Nicholas Carnes, a Duke University social scientist and scholar of public policy, have earned the U.S. National Science Foundation's Alan T. Waterman Award, the nation's highest honor for early-career scientists and engineers.

"It is truly a delight to recognize the outstanding talent embodied by Dr. Carnes and Dr. Wood as this year's recipients of the Alan T. Waterman Award, the highest honor given to early-career scientists and engineers," said NSF **Director Sethuraman Panchanathan**. "Wood is tackling the mysteries and most complex problems in mathematics by looking into the connection of number theory and random matrices"

En savoir plus : <https://tinyurl.com/ydj95apv>

Nearly 40 years after creating the first, iconic map of the universe, researchers aim for the largest map ever



In 1983, astrophysicists at the Center for Astrophysics Harvard & Smithsonian (CfA) released a cosmic map using 2,400 galaxies. Now, CfA scientists are aiming to map 30 million.

By surveying a vast volume of space, the scientists of the DESI collaboration — including a dozen from the CfA — will be able to address a myriad of questions in modern cosmology: how does the early universe create large-scale structures, how does gravity cause matter to collect and form galaxies, and what might be driving the enigmatic acceleration of the expansion of the universe?

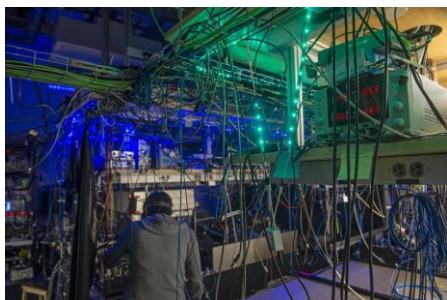
The second, more extensive map by Margaret Geller and Huchra, revealed on the cover of Science in November 1989, was groundbreaking.

Built by a collaboration of hundreds of people, and with primary funding from the U.S. Department of Energy Office of Science, DESI has been installed and is now being operated on the retrofitted Nicholas U. Mayall four-meter Telescope at Kitt Peak National Observatory. The instrument will allow scientists to study redshifts at an unprecedented scale a time.

En savoir plus : <https://tinyurl.com/cbw66udz>

Mai 2021

Mapping the quantum frontier, one layer at a time



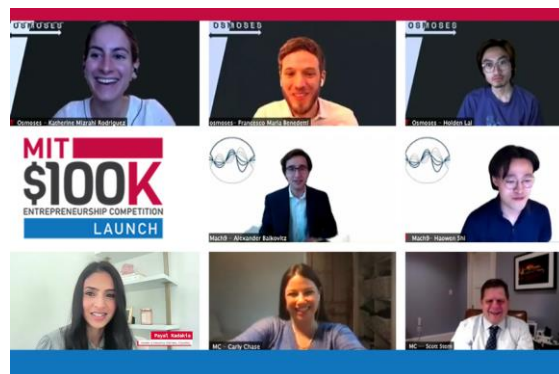
Today, much of quantum mechanics is explained by Schrödinger's equation, a kind of master theory that governs the properties of everything on Earth. "Even though we know that, in principle, quantum mechanics governs everything," **Kang-Kuen Ni**, the Morris Kahn Associate Professor of Chemistry and Chemical Biology and of Physics said, "to actually see it is difficult and to actually calculate it is near-impossible."

With a few well-reasoned assumptions and some innovative techniques, Ni and her team can achieve the near-impossible. And now, with ultracold chemistry — in which atoms and molecules are cooled to temperatures just above absolute zero, where they become highly controllable and more visible — Ni and her lab members have collected real experimental data from an unexplored quantum frontier, providing strong evidence of what the theoretical model got right (and wrong) and a roadmap for further exploration into the shadowy next layers of quantum space.

En savoir plus : <https://tinyurl.com/bdmuvk3k>

"Osmoses" a startup improving chemical separations wins MIT \$100K competition

Osmoses, a startup trying to dramatically increase the efficiency of chemical separations, got a major boost Thursday when it won the MIT \$100K Entrepreneurship Competition. The company has developed a molecular filtration solution containing tiny channels that can be precisely sized to separate even the smallest molecules.



The company claims its membranes can form channels that are 1/100,000 the width of a human hair, allowing the separation of molecules that differ in size by a mere fraction of an angstrom — less than the size of an atom.

Many chemical separation processes, such as distillation, use huge amounts of energy in the form of heat. Membrane filtration offers a promising alternative form of separation, but Osmoses says most membranes today have poor performance, leading to low adoption rates among chemical plants and higher operating costs. The company is starting by targeting gas and vapor separations in the traditional and renewable natural gas processing space.

Osmoses says by switching to its solution, companies in the market can reduce product loss by 85 percent, generating added fuel that could power 7 million additional homes in the U.S. for a year.

En savoir plus : <https://tinyurl.com/Seuetdrt>

Researchers develop mathematical model to predict disease spread patterns



Early in the COVID-19 pandemic, health officials considered contact tracing the most effective way to anticipate the virus's migration from initial, densely populated hot spots to new locations. Months later, infections were being recorded in similar patterns in nearly every region of the country, both urban and rural.

Alerted by the unusual wealth of data regularly published throughout the pandemic by county health agencies, a team of environmental engineers began researching new methods to describe what was happening without needing to obtain information on individuals' movements or contacts. The project was funded by the U.S. National Science Foundation.

When the alarm went out in March of last year, it was already too late, the scientists found. "While the superhighways of contagion -- air flights -- were curtailed, the disease spread at the local level from city to city," said **Michel Boufadel**, an environmental engineer at NJIT and corresponding author of the study. "Using the standard precautions of masking and distancing is not enough if there are a lot of people out there. There will still be superspreader events resulting from 5-10 people gathering.

En savoir plus : <https://tinyurl.com/rwehk627>

Science, art and culture: Cicadas impact our lives more than just once every 17 years



Photo credit: West Virginia University

Over the next few weeks, trillions of cicadas will tunnel upward from deep underground after 17 years to live out their last days. They'll shed their skin to become mature adults and within several weeks, mate, lay eggs and die. Brood X (Brood 10), also known as the Great Eastern Brood, has the greatest concentration and range of the 17-year cyclical cicadas and are an awesome spectacle of nature. These periodic swarms of cicadas can disrupt or enliven everyday life for humans and are a critical event for researchers to better understand everything from climate change to disaster preparedness to our cultural history.

The wings of cicadas are lightweight water repellant and differ in reflectivity due to their nanostructured pillars. The natural design of their wings has inspired techniques to create new materials such as light-scattering, antibacterial and water-repellant fabrics. To mimic the design, researchers use a technique called nanolithography, making an impression of the wings, and transferring it to other materials like polymer, silicone or gold.

En savoir plus: <https://tinyurl.com/374ma59d>

Mai 2021

Bioengineering department adds single-cell expert via CPRIT grant



Julia Vlassakis will join the Department of Bioengineering faculty as an assistant professor this summer with the support of a **\$2 million grant by the Cancer Prevention and Research Institute of Texas (CPRIT)**.

The grant to recruit **Vlassakis**, who earned her doctorate and has worked as a postdoctoral researcher at the University of California, Berkeley, since 2018, is part of \$69 million in funding announced in May.

“My work in the Herr lab has focused on designing tools that allow us to look at the composition of individual cells and protein interactions that carry out the vast functions and give structure to the cell,” she said. “We found ways to preserve those complexes and to use microdevices to isolate and quantify them. It’s really exciting to be able to see the composition of individual cells.

She said certain cancers, including the bone and connective tissue cancer Ewing sarcoma, are driven by single mutations that result in the fusion of domains from two proteins. “They give cells vastly different functions, and the ability to proliferate or metastasize,” **J. Vlassakis** said. “We want to use our tools to look at these rogue cells with distinct metastatic or drug-resistant states to discern what’s different and find new ways to target and treat those particular cancers.

En savoir plus : <https://tinyurl.com/4r3dad7f>

Johns Hopkins, Bloomberg philanthropies announce \$150M effort to fuel diversity in STEM fields



Johns Hopkins University and Bloomberg Philanthropies today announced the launch of a \$150 million effort to directly address historic underrepresentation in science, technology, engineering, and math fields, and to prepare a new, more diverse generation of researchers and scholars to assume leading roles in tackling some of the world's greatest challenges.

The Vivien Thomas Scholars Initiative at Johns Hopkins—named for one of the institution's most celebrated figures, a Black surgical laboratory supervisor best known for his work to develop a lifesaving cardiac surgical technique—will create new pathways for students from Historically Black Colleges and Universities and Minority Serving Institutions to pursue and earn PhDs in STEM fields.

More than \$15 million in funding will be dedicated to strengthening pathways for talented undergraduates to pursue STEM PhDs at Johns Hopkins and elsewhere. Those efforts will begin with direct funding of programs at an initial cohort of six partner HBCUs and MSIs with an exceptional record of accomplishment in graduating students who advance to STEM PhD careers—Howard University; Morehouse College; Morgan State University; Prairie View A&M; Spelman College; and the University of Maryland, Baltimore County.

En savoir plus: <https://tinyurl.com/3r2rydwj>

CANADA

UBC breaks ground on 23 M-CAD renewable energy hub

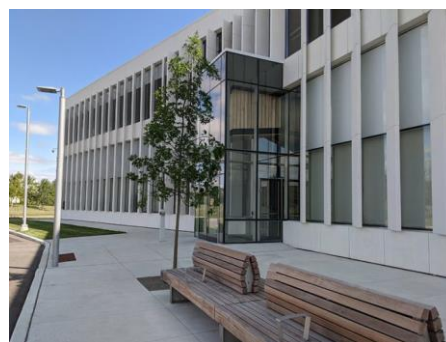


A new 23 M-CAD renewable energy hub will transform an entire city block at the University of British Columbia into a smart energy district, including the province's first-ever hydrogen refuelling station for light- and heavy-duty vehicles. It will also include the addition of a solar array, as well as intelligent charging infrastructure for electric vehicles.

The energy hub will become a city-scale, "living laboratory" that explores critical links between energy, transportation and urban design. The project is led by Dr. Walter Mérida, a professor of mechanical engineering at the faculty of applied science. A key feature is a water electrolyzer that uses electricity from the solar panels to split water into hydrogen and oxygen, resulting in "green hydrogen" — or 100 per cent renewable hydrogen.

En savoir plus : <https://tinyurl.com/nj6cas7e>

NRC unveils advanced materials research centre



The National Research Council (NRC), Canada's largest federal research and development organization, recently opened its doors its brand-new advanced materials research facility in Mississauga. Located in Sheridan Research Park, the facility represents the NRC's first physical R&D presence in the Greater Toronto Area.

The facility acts as a catalyst to accelerate the development of advanced materials technologies and their commercialization in disruptive new products. Together with industry, academia, and other government department (OGD) partners, the facility establishes and operates a national innovation platform, supporting and undertaking foundational research and development (R&D) to develop new materials, scaling up their production, and de-risking and demonstrating their application.

The NRC's Mississauga facility also represents a major stepping stone in a long-term vision supporting the creation of the Canadian Campus for Advanced Materials Manufacturing (CCAMM), a joint initiative between the NRC and the Xerox Research Centre of Canada.

En savoir plus : <https://tinyurl.com/ystvpzun>

Le Canada enverra un robot sur la Lune... et un astronaute en orbite lunaire



PHOTO: IMAGE DE LA NASA

Au cours des cinq prochaines années, le Canada enverra un robot sur la Lune, en plus d'expédier l'un de ses astronautes en orbite autour de notre satellite naturel, dans le cadre du projet Gateway de la NASA.

Le Canada a déjà annoncé en 2019 qu'il allait faire partie de Gateway, le projet américain de station orbitale lunaire auquel participent aussi l'Europe et le Japon. Cette station devrait ensuite devenir une escale pour des voyages plus lointains, notamment vers la planète Mars.

Le robot canadien, lui, doit permettre de faire des expériences scientifiques à la surface de l'astre lunaire.

Le projet permettra de tester plusieurs technologies mises au point au Canada. La compagnie sherbrookoise NGC Aerospace a créé un système permettant à un appareil de connaître sa position exacte en se basant sur la disposition des cratères de la Lune. Le président de l'entreprise, Jean de Lafontaine, a expliqué lors de la conférence de presse que son logiciel permettrait "d'atterrir de manière autonome, mais aussi en évitant les obstacles".

En savoir plus : <https://tinyurl.com/yma3mxmk>

Le quantique aurait un impact aussi important que celui de l'IA



Photo: Seth Wenig Associated Press

Le gouvernement fédéral a réservé 360 millions de dollars dans son budget 2021 à l'élaboration d'une stratégie nationale de l'informatique quantique pour faire du Canada un leader mondial de ce secteur en émergence.

Le Canada est un des pays du G7 qui investit le plus dans le quantique. Le nombre de nouvelles entreprises canadiennes qui s'y spécialisent est particulièrement élevé. Mais le cœur de l'informatique quantique se déplace de plus en plus vers la Chine, qui a fait des percées majeures dans ce secteur dernièrement.

Le Canada peut toutefois continuer d'être un leader, croit IBM, à quatre conditions : il doit ouvrir des centres d'excellence pour attirer les spécialistes, créer des compétitions ciblées pour améliorer la technologie, financer des projets d'envergure nationale pour stimuler la croissance d'un écosystème et assurer un financement, sous forme de capital-risque, aux entreprises en démarrage.

En savoir plus : <https://tinyurl.com/mr4tn3sw>

Mai 2021

University Innovation: A Transformative Force for Canada's Post-Pandemic Economy



Sophie D'Amours is Rector of Université Laval and Chair of the Board of Directors of Universities Canada. Since the dawn of this century and the fourth industrial revolution, trends toward interdisciplinary, inter-institutional collaboration and academic-industry technology transfer have underscored universities' status as a knowledge network. The COVID-19 pandemic has accelerated those trends in a way that can also make universities indispensable to Canada's innovation economy.

To start, we need to do a better job of celebrating our successes and ensuring Canadians are proud of new businesses, proud to be the first in a sector, or leaders in a given field. Young people have always been the vanguard of cultural change, so we can turn to colleges and universities as environments with great potential to fuel and reinforce this culture of innovation.

En savoir plus : <https://tinyurl.com/s7zcyjv>

Without foreign exchange students, we lose a vital transfer of knowledge

The pandemic has had a devastating impact on travel and tourism. Perhaps less appreciated is the dramatic change to scientific exchange programs. Basically, they stopped completely.

Should we continue to discourage or even prohibit students coming from abroad when they offer so much to the Canadian scientific research effort? While Zoom meetings are useful for sharing data and having a discussion, they are clearly not ideal for actually doing science in the laboratory. The hands-on experience of experimental work is vital to the transfer of knowledge.

In his recent opinion, Mark Lautens, professor at the University of Toronto, enlightens the issue.

En savoir plus : <https://tinyurl.com/6rzms3by>

Mai 2021

Les Prix du gouverneur général pour l'innovation

Les prix pour l'innovation rendent hommage à des personnes, équipes ou organismes canadiens d'exception, pionniers et créateurs qui contribuent à la réussite de notre pays, aident à façonner l'avenir et inspirent la prochaine génération.



Governor General's
Innovation Awards

Prix du Gouverneur général
pour l'innovation

Les lauréats 2021 sont :

Dr. Xiaoyi Bao, de l'Université d'Ottawa pour le développement des capteurs acoustiques distribués

Dr. Sheila Wang, de l'Université McGill pour les solutions alimentées par l'Intelligence artificielle (IA) pour les soins de plaies

Dr. Jackie Dawson et Dr. Natalie Carter, de l'Université d'Ottawa, Mme. Natasha Simonee, enseignante inuite de la communauté Mittamatalik; et **Mme. Shirley Tagalik** de l'Arviat Aggumavvik Society, pour l'intégration novatrice du savoir inuit traditionnel et des sciences occidentales

Dr. Geoffrey T. Fong, Dr. Mary E. Thompson, Dr. David Hammond de l'Université de Waterloo, pour le Projet «International Tobacco Control Policy Evaluation » (ITC) Dr. James Robar, la Régie de la santé de la Nouvelle-Écosse pour les appareils d'impression 3D pour le traitement par radiothérapie des patients atteints de cancer

Mi'kmaw Kina'matnewey, un collectif de 12 communautés mi'kmaq de la Nouvelle-Écosse pour Leaders canadiens en éducation autochtone, pour développer un milieu propice à la prospérité de la culture, de la langue et de l'identité mi'kmaq.

En savoir plus: <https://tinyurl.com/58h5kd82>

MEXIQUE

L'IPN et l'INRAE obtiennent un brevet pour la découverte de probiotiques anticancéreux

DIRECTORIO |



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Instituto Politécnico Nacional
"La Técnica al Servicio de la Patria"

Grâce à la collaboration dans l'étude des probiotiques dérivés des boissons fermentées mexicaines, des scientifiques de l'Institut national polytechnique (IPN) et de l'Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE), ont obtenu un brevet international pour la découverte d'une bactérie lactique provenant du pulque (boisson à base de jus d'agave fermenté), qui a des propriétés anticancéreuses.

Les chercheurs **María Elena Sánchez Pardo**, de l'École nationale des sciences biologiques (ENCB), **Edgar Torres Maravilla**, diplômé de l'ENCB, **Luis Bermúdez Humarán**, diplômé de l'Université autonome de Nuevo León et directeur de recherche de l'INRAE, ainsi que **Langella Philipe**, de l'INRAE, ont découvert que la bactérie lactique *Lactobacillus brevis* inhibe jusqu'à 40 % la prolifération des cellules cancéreuses du côlon.

La docteure **María Elena Sánchez Pardo** a indiqué que, après avoir obtenu le brevet, **M. Luis Bermúdez Humarán** a géré le transfert de la technologie aux États-Unis, au Canada et dans l'Union européenne.

En savoir plus : <https://tinyurl.com/392hfwy2>

Mai 2021

Le Centre Universitaire du Sud (CUSur) prépare son premier journal de vulgarisation scientifique



Le « **Journal of behavior and feeding** » est le nom de la revue scientifique qui, à partir du mois de juillet sera publiée tous les six mois par le Centro Universitario del Sur (CUSur), par l'intermédiaire de l'Institut de Recherches sur le Comportement Alimentaire et la Nutrition du Mexique (IICAN).

Le directeur de l'institut, M. Antonio López Espinoza, a expliqué que cette initiative découle du besoin d'un groupe interdisciplinaire de chercheurs de disposer d'un moyen de diffuser les recherches effectuées, afin qu'elles aient un effet sur la société.

Il rappelle qu'à l'origine de l'IICAN il avait le désir d'avoir sa propre revue scientifique. Après 14 ans de travail ils ont consolidé le Réseau International de Recherche sur le Comportement Alimentaire et la Nutrition, qui réunit des centres de recherche et des instituts en Espagne, Italie, France, Argentine, Chili, Colombie, Cuba, Canada et Mexique, qui participeront également à la publication.

En savoir plus : <https://tinyurl.com/5a7t44x7>

La réserve de biosphère de Manantlán, un exemple de compensation pour les services environnementaux.



Dans un article publié dans la prestigieuse revue scientifique Nature, la réserve de biosphère de la **Sierra de Manantlán** (Jalisco, Mexico) a été citée comme un exemple de réussite en matière de mesure et de compensation des services environnementaux dans les communautés autochtones qui dépendent de cette zone naturelle protégée.

L'universitaire du département d'écologie et de ressources naturelles du Centre universitaire de la côte sud (CUCSur), le **Dr Enrique Jardel Pelaez**, a jugé satisfaisant que la publication fasse référence aux travaux réalisés depuis plus de deux décennies dans la réserve, en particulier dans la communauté de Cerro Grande, dans la partie orientale de la réserve, qui appartient à l'État de Colima.

En savoir plus : <https://tinyurl.com/77frx9re>

Des scientifiques de CUCiénega font découvrir les sciences et la technologie aux enfants



Il s'agit d'un programme réalisé par la division du développement biotechnologique, par le biais du département des sciences technologiques, et qui a été diffusé sur le Facebook du campus universitaire.

"Nous avons à cœur de diffuser la science, et nous voulons que les enfants en fassent également l'expérience", a partagé le Dr **Lucila del Carmen Arias Patiño**, qui a expliqué chacune des expériences qui peuvent être reproduites à la maison.

L'une des activités était la création d'une encre invisible, fabriquée à partir de jus de citron et pouvant être imprimée sur une feuille de papier. Une source de chaleur est ensuite appliquée (comme un fer à repasser), puis l'encre brûle et les lettres apparaissent. "C'est la chimie en action, voici une réaction appelée combustion", a expliqué Arias Patiño. La transmission du Club scientifique des enfants de CUCiénega par d'une volonté d'enseignement des sujets scientifiques et technologiques aux plus jeunes et continuera à être transmise par le biais du **Facebook de CUCiénega**, avec le soutien de l'unité d'extension du campus.

En savoir plus : <https://tinyurl.com/ymj5nd6v>



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