Dear friends,

This month I would like to enhance French-American collaborations in science, which have led in January to the publication of several science papers:

Researchers at the CEA-iMETI in the Saint Louis Hospital in Paris, France have found a new therapeutic agent to prevent graft rejection in collaboration with the University of Georgia. Other scientist from the University of Georgia worked with a French team from the Université François Rabelais in Tours, France on parasitic worms that may help to treat diseases associated with obesity.

In this month newsletter, you will learn that scientists at the University on North Carolina-Chapel Hill found a promise treatment against peanut allergy, one of the most common triggers of severe food-induced allergic reactions, that the Andromeda galaxy is surrounded with a multitude of dwarf galaxies, and so much more that I let you discover.

Have a good reading,

Juliane Halftermeyer, Deputy Scientific Attaché in Life Sciences

- **UAB researchers look for answers in acute lung injury**, University of Alabama at Birmingham (AL), 01/03/2013.
  Scientists shed new light on mechanisms of acute lung injury. The study suggests, for the first time, one reason why two promising trials designed to investigate therapies for acute respiratory distress syndrome (ARDS) were halted for futility.

  >> Learn more

- **Coral Records Suggest that Recent El Nino Activity Rises Above Noisy Background**, Georgia Institute of Technology (GA), 01/03/2013.
  By examining a set of fossil corals that are as much as 7,000 years old, scientists have dramatically expanded the amount of information available on the El Nino-Southern Oscillation, a Pacific Ocean climate cycle that affects climate worldwide. The new information will help assess the accuracy of climate model projections for 21st century climate change in the tropical Pacific.

  >> Learn more

- **Study uncovers protein key to fighting and preventing obesity**, University of Florida (FL), 01/06/2013.
  Researchers have identified a protein that, when absent, helps the body burn fat and prevents insulin...
resistance and obesity. The discovery could aid development of drugs that not only prevent obesity, but also spur weight loss in people who are already overweight.

- **Sublingual immunotherapy shows promise as treatment for peanut allergy**, University of North Carolina at Chapel Hill (NC), 01/07/2013.
  Peanuts are one of the most common triggers of severe food-induced allergic reactions, which can be fatal, and the prevalence of peanut allergy is increasing. However, there is currently no clinical treatment available for peanut allergy other than strict dietary elimination and, in cases of accidental ingestion, injections of epinephrine. But a new multicenter clinical trial shows promise for sublingual immunotherapy (SLIT), a treatment in which patients are given daily doses, in gradually increasing amounts, of a liquid containing peanut powder.

- **Simulated Mars mission reveals body's sodium rhythms**, Vanderbilt University (TN), 01/10/2013.
  Titze and his colleagues report that — in contrast to the prevailing dogma — sodium levels fluctuate rhythmically with 7-day and monthly cycles. The findings, which demonstrate that sodium is stored in the body, have implications for blood pressure control, hypertension and salt-associated cardiovascular risk.

- **A Fungus That Could Fight Cancer**, University of Tennessee at Knoxville (TN), 01/15/2013.
  Researchers published a study that could one day mean an exciting new treatment for cancer. For the first time researchers have captured the nanoparticles from a micro-organism for use in therapy. They found that a particular fungus, Arthrobotrys oligospora, secretes these tiny particles when it traps its food. (The fungus feeds on nematodes, or tiny roundworms.) The team also found that the nanoparticles this fungus produces may actually kill cancerous tumors and stimulate the immune system.

- **Fighting sleep: UGA discovery may lead to new treatments for deadly sleeping sickness**, University of Georgia (GA), 01/17/2013.
  While its common name may make it sound almost whimsical, sleeping sickness, or African trypanosomiasis, is in reality a potentially fatal parasitic infection that has ravaged populations in sub-Saharan Africa for decades, and it continues to infect thousands of people every year. Researchers have made a discovery that may soon lead to new therapies for this critically neglected disease that cause neither the risks nor the pain associated with traditional treatments.

- **Novel Sensor Provides Bigger Picture**, Duke University (NC), 01/18/2013.
  Engineers have developed a novel "sensor" that is more efficient, versatile, and cheaper for potential use in such applications as airport security scanners, and collision avoidance systems for aircraft, cars or maritime vessels.

- **Genetic basis of high-risk childhood cancer points to possible new drug treatment strategy**, St Jude Children’s Research Hospital (TN), 01/20/2013.
  Scientists lead a study that finds new genetic defects in high-risk childhood leukemia subtypes with chromosomal loss and evidence that some patients have an inherited cancer syndrome.

- **Bascom Palmer Researchers Make Discoveries That Could Restore Vision in Demyelinating Disease**, University of Miami (TN), 01/30/2013.
  Identifying the mechanisms behind progressive vision loss associated with glaucoma and demyelinating diseases such as multiple sclerosis is a goal for many ophthalmic researchers. A research team demonstrates for the first time how these disease processes cause important changes to neurons in the retina.
- **An immense disk of dwarf galaxies around the Andromeda galaxy** (only in French), CNRS, Université de Strasbourg, 01/03/2013.
Andromeda galaxy, the closest giant galaxy from us, is surrounded with a multitude of dwarf galaxies. This structure, extremely flat, spreads over more than one million light years and seems to turn around the galaxy. It has been discovered by an international team including Rodrigo Ibata and … his 15 years old son.

- **Cell division : some meiosis’ mechanisms better understood** (only in French), Institut Curie, 01/03/2013.
A team of researchers has just discovered the links between several crucial proteins during cell divisions leading to the production of sexual cells.

- **Detrimental effect of obesity on lesions associated with Alzheimer’s disease**, also available in French, Inserm, Université Lille 2, Université Lille Nord de France, 01/07/2013.
Researchers have recently used a neurodegeneration model of Alzheimer’s disease to provide experimental evidence of the relationship between obesity and disorders linked to the tau protein.

- **Retracing the evolutionary history and emergence of tuberculosis**, also available in French, CEA-Genoscope, Sanger Institute, Institut Pasteur, CNRS, INSERM, Université Lille 2, 01/07/2013.
Scientists have recently determined the origin of the emergence of the Mycobacterium tuberculosis bacterium, the main causative agent of tuberculosis. Researchers have also provided insights into its evolutionary success. They have identified several genetic mechanisms that could have contributed to the worldwide dissemination of this pathogen, which currently infects up to 2 billion people. This research offers possibilities for identifying new targets in the fight against tuberculosis.

- **The smallest engine for which you can control its rotating direction** (only in French), CEMES, CNRS, Université d’Ohio, 01/07/2013.
A nanoscale motor whose rotating direction can be reversed at will was created by a Franco-American team. For the first time, they have reached the lower limit size for a device capable of converting energy into a rotating movement. Of only 2 nanometers in diameter, the rotor of the motor is set in motion by electrons delivered by the tip of a scanning tunneling microscope.

- **The protein responsible for the Huntington disease is also implicated in breast tumors** (only in French), Inserm, Institut Curie, 01/10/2013.
Known for its implication in the Huntington disease, a neurodegenerative disease, the mutant huntingtine protein is also implicated in spread and aggressiveness of breast tumors.

- **Discovery of the geological signature of Himalayan’s strong earthquakes of 1255 and 1934** (only in French), CEA, CNRS, 01/11/2013.
A team of French, Nepalese and Sigaporean researchers has found the existence of surface rupture linked to a really high seismic activity, along the Himalayan’s main boundary fault. Historical chronics show the existence of really strong past seism, notably in 1255 and 1934, but no geological tracks are related to them on the surface. The discovery of surface rupture linked to these events will allow to study periodicity of those strong local earthquakes, in order to better understand the geological activity of this area and improve the prevention of the risks run by populations.
How mice undergoing repeated aggression develop a social aversion?

One mechanism implicated in the appearance of depression caused by stress have been revealed in mice. Researchers have determined the role of the corticosterone receptor, the stress hormone, in long-term modification of the behaviour induced by a chronic stress. In mice undergoing repeated aggression, this receptor participates in the setting-up of a social aversion by controlling the dopamine release, a key chemical messenger.

Learn more (only in French)

The skin aging regulator

Despite progress in regenerative medicine, with age, the skin loses its properties in an irreversible manner. Researchers have just defined the cellular and molecular mechanisms involved in maintaining skin cells and skin healing in advanced years. These mechanisms, described in vivo in mice, engage molecule CD98hc, which is involved in epidermis renewal and could be an indicator of the skin's capacity for regeneration.

Learn more

Greenland ice cores tell story of warm spell

The analysis of ice cores extracted at the NEEM ice-drilling site has enabled an international team of scientists to reconstruct Greenland’s climate history over the past 130,000 years. For the first time in the Arctic, the researchers have succeeded in retrieving ice formed during the last interglacial period, 130,000 to 125,000 years ago, which was marked by significant warming in that region. Their findings show that the Greenland ice sheet only contributed 2 meters to the 4—8 meters of sea level rise observed during that period.

Learn more

Events

Emory University (Atlanta)
- February, 6, 6:00 to 8:15pm
‘100 Million Miracles : Vaccine Science in the African Meningitis Belt’
- February, 7, 11:30am to 5:30pm
‘Academic and Industry Intersection Conference’

Georgia Institute of Technology (Atlanta)
- February, 9, 9:30am to 5:00pm
‘Transportation Camp South at Georgia Tech’
- February, 21-22
'Biomedical Innovation and Development Conference'
- February, 21-22
‘2013 Suddath Symposium’

Georgia State University (Atlanta)
- February, 21, 10:00am
‘Autoimmune Mechanisms of Peripheral Neuropathies : Role of Anti-glycolipids in Guillain-Barre Syndrome’

Florida Atlantic University (Boca Raton)
- February, 7-8
‘Indian River Lagoon Symposium 2013’

University of Central Florida (Orlando)
- February, 4, 2:30 to 3:30pm
'A Tale of Two Training Strategies : Boosting Cognitive & Brain Health'
- February, 15, 1:00 to 3:00pm

'UCF's Asteroid Viewing Party 2013'
- February, 22, 4:30 to 5:30pm

'Radio Spectroscopy of OH in cometary atmospheres'
University of Miami (Miami)
- February, 27, 10:00am to 6:00pm

'CTSI CaneSearch'
Florida State University (Miami)
- February, 5, 6:15 to 7:30pm

'The Secret Life of Fish'

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**Duke University (Duke)**
- February, 4, 10:00am to 12:00pm

'Debunking Myths about Global Cancer'
- February, 12, 12:00 to 1:00pm

'Variability, Compensation, and Homeostasis in a Neuronal Circuit'
- February, 19, 12:00 to 1:00pm

'Fear and fear-related disorders : from Pavlov to PTSD'
East Carolina University (Greenville)
- February, 25, 4:30pm

'Galen's Place in the History of Medicine'

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**University of Tennessee Health Science Center (Memphis)**
- February, 7, 12:00 to 1:00pm

'In Vitro ADMET in Drug Discovery'
- February, 15, 3:00 to 6:00pm

'Department of Medicine Research Day'
- February, 16, 7:30 to 4:30pm

'Annual Meeting of the Memphis Eye Society and Tennessee Academy of Ophthalmology'
University of Tennessee (Knoxville)
- February, 7, 3:40 to 5:00pm

'Mesozoic Denudation of the Southern Appalachian Orogen : Insights and Implications'
- February, 15, 3:30 to 4:30pm

'From tundra to tropics and points in between - Providing data for climate change models'
Vanderbilt University (Nashville)
- February, 4, 3:30 to 4:30pm

'Directed Cell Fate in a Couple of Clicks : Dynamic Tailorability of the Stem Cell Niche'
- February, 7, 4:00 to 5:00pm

'Rehabilitation, Robotics and Real-time fMRI'
- February, 27, 4:00 to 5:00pm

'The Decline of Neo-Darwinism and Evolutionary Psychology'

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**Auburn University (Auburn)**
- February, 12, 3:00 to 8:00pm

'Career Expo : Engineering & Technical Majors'
University of Alabama (Birmingham)
- February, 8, 1:30 to 5:00pm
Started in 2007, the program for professional mobility entitled "France-USA Technology Transfer Exchange program" (FATTE) was in operation thanks to the C.U.R.I.E network and the Office for Science and Technology in Boston of the Embassy of France in the United-States. During the academic year 2011-2012 a change in the program was introduced. Now called FATTE+, the program is more comprehensive and bilateral. Project selection criteria are now based on the bilateral aspect of the proposal: the selected projects will be the ones building a real long term exchange between the two countries (opposed to the isolated stays with no future nor bilateral dimension), and helping to promote the French research sector in the United States. FATTE+ is also intending to generate any project in TT activity, research commercialization, etc., not just human capital oriented projects as it was before.

In 2013, the projects will be selected from candidates:
- Having several years of experience in TT
- Having 1 or 2 years professional experience in TT
- Having professional experience in the private sector and beginning a career in TT.

All in all FATTE+ aims at reinforcing French and American cooperation in technology transfer.

More information and application, also in French.

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W44 and its environment


The aftershock of a stellar explosion rippling through space is captured in this new view of supernova remnant W44, which combines far-infrared and X-ray data from ESA’s Herschel and XMM-Newton space observatories. W44 is the vast purple sphere that dominates the left hand side of this image, and measures about 100 light-years across.

W44, located around 10 000 light-years away within a forest of dense star-forming clouds in the constellation of Aquila, the Eagle, is one of the best examples of a supernova remnant interacting with its parent molecular
cloud.
For more information, also available in French.

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