INTERDISCIPLINARY
RESEARCH INSTITUTE
OF GRENOBLE

Scientific Newsletter

WINTER 2019

Editorial

I am pleased to present to you the new format of IRIG scientific letter. From now on, this quarterly newsletter aims to highlight the remarkable scientific results obtained by the Institute's teams, with a view to making these results accessible to all. The extreme wealth of science that is conducted at IRIG is perfectly illustrated by the articles you will discover. Beyond the effort required to "decode" the language of disciplines that are not familiar to us, we bet that this letter will be a valuable tool to push the limits of our curiosity and thus get to know us better and make us known. The IRIG website, for its part, will continue to provide more complete information by covering all the key scientific facts resulting from the research carried out in our laboratories.

This editorial comes at a time when IRIG is about to blow out its first candle. This year has passed very quickly, and it will be important to take an assessment of it. To this end, I am already looking forward to seeing you on 6 April, the date on which our first general meeting will be held. We will come back to the impact of the creation of the institute. This impact has obviously not been the same for everyone. It was significant for the support teams. Creating a new institute has indeed required the harmonization of a set of processes that govern the functioning of our entities. This harmonization work was carried out with the aim of seeking to take the best of the old processes, which required a clear questioning of past practices and a strong mobilization of the support teams; I am extremely grateful to them. With regard to research teams, the impact of the creation of IRIG will be felt on a longer time scale. However, important projects have already been identified: major patrimonial projects with the aim of improving living conditions at work and increasing your safety, mobilization to make investments essential to the continuation of our scientific projects, positioning of the "IRIG object" in the landscape of non-CEA trustees... Faced with the importance of scientific, organizational and structural challenges that lie ahead, I would like us to move forward in the context of enhanced consultation; this will be a priority for 2020.

I would like to conclude by wishing you and your families a happy Christmas and New Year. May this truce be relaxing and joyful!

Jérôme Garin, Head of the Interdisciplinary Research Institute of Grenoble

At the front page of IRIG

The origins of a hormone signaling pathway

The study of the origin of auxin signaling suggests that this family of proteins has retained its biochemical and structural properties that are now found in terrestrial plants.

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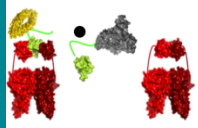

Renaud Dumas
LPCV

PLoS genetics, 2019

Optimization of spin-charge conversion

A very high spin-charge conversion effect is demonstrated in a 2DEG generated on the surface of strontium titanate *via* the deposition of a thin layer of aluminum at room temperature.

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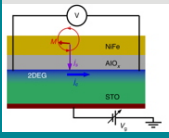

J-P Attané, Spintec
Hanako Okuno,MEM

Nature Materials., 2019

ProteoRE, a web application for the discovery of biomarkers of diagnostic interest

ProteoRE is a a web application that provides a set of tools accessible to biologists to define their own strategy for selecting biomarker candidates.

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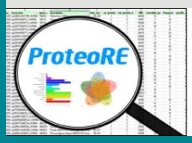

Yves Vandenbrouck
BGE

Proteomics, 2019

Contactless electro-functionalization of micro and nanopores

CLEF is a process called contactless electro-functionalization with promising applications in bio-detection, particularly for the analysis of living cells

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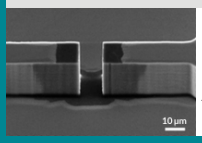

A. Bouchet-Spinelli
SyMMES

Anal. Chem., 2019

Towards a germanium laser operating at room temperature

A laser emission was obtained from germanium over a very wide frequency range and within a few K of ambient temperature.

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Nicolas Pauc
Pheliqs

Nat. Comm., ACS Photonics

A new weapon to counter antibiotic resistance

While pathogenic bacteria are becoming increasingly resistant to antibiotics, the therapeutic potential of ruminococcin C, a naturally occurring peptide, arises.

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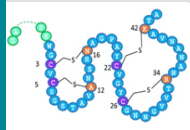

Victor Duarte, CBM
Yohann Couté, BGE
Mikael Lafond, iSm2

Science Advances, 2019

A candidate for HIV-1 vaccine development

In this study, a novel broadly neutralizing antibody against an HIV epitope is characterized. The structural characteristics of a candidate for vaccine development is defined so that it produces strong antibodies to promote immunogenicity.

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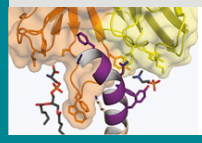

Christophe Caillat
IBS

Cell Host Microbe, 2019

Protect the vascular endothelium of the liver from defenestration

When liver cells are attacked, they produce scar-like tissue whose pathological accumulation is called fibrosis. BMP9 is proposed as a new therapeutic target for the treatment of hepatic fibrosis.

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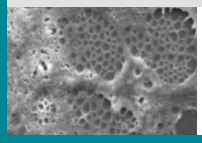

Jean-Jacques Feige
BCI

Hepatology - Cells, 2019

HeII in the HL-LHC collider

CERN turned to the expertise of the DSBT to create a heat exchanger for the HL-LHC collider. This exchanger represents a technical feat in terms of compactness and performance. This type of exchanger will be installed in the superconducting magnets and in the LHC tunnel by 2022.

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B. Rousset & F. Millet
DSBT

Little Girl on a swing

This work demonstrates a new method for reading the state of a quantum bit by gate dispersive reflectometry.

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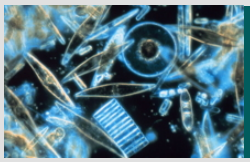
Romain Maurand
Pheliqs

Nat. Comm., 2019

Other scientific news of the IRIG laboratories



Genetic flexibility of diatom nitrogen transporters in response to environmental changes

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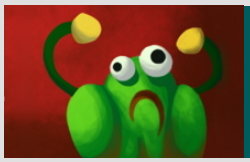

Algocalypse Now - A game to fight invasive algae

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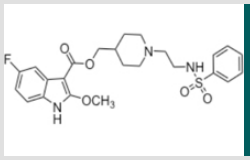

An innovative approach to inhibit CK2 protein kinase

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Scientific news from the Institute of Structural Biology

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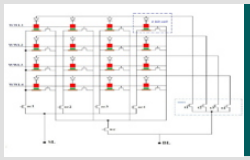

High-density SOT-MRAM memory array based on a single transistor

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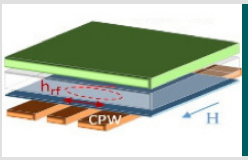

Impact of eddy currents in nanostructures destined for use in spintronics

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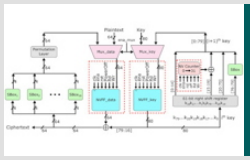

Light-weight cipher based on hybrid CMOS/STT-MRAM: Power/ Area analysis

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