

Editorial

The beginning of 2023 is the occasion for us to publish the first IRIG scientific newsletter during the winter season. It is a good time to take stock of what has been accomplished before looking ahead to the New Year.

Once again, the year 2022 has been marked by many successes and scientific results all across the 9 UMRs. The diversity of scientific topics our laboratories focus on, and the quality of your research work, make our institute a major player in the scientific and social fields. Like the previous scientific newsletter, the few highlights selected among many illustrate the wide range of scientific topics covered by the Institute. The year 2022 has been packed, first thanks to the numerous publications and awards recognizing both our doctoral students, post-doctoral students, as well as our senior researchers. Further, the sustained development of institutional and industrial partnerships (regional, national and European), as well as the launch of several start-up projects have also greatly contributed to the visibility of the Institute.

The year 2022 was also marked by the many participants invested to benefit from the new national REPP programs (Research and Equipment Priority Programs) within the framework of the France 2030 Plan and the PIA4, in order to consolidate French leadership in scientific fields that are a priority or likely to be linked to major transformations. IRIG is involved in nearly 20 highly supported or exploratory REPPs in the fields of digital technology, health, energy and the environment, etc. This great collective success demonstrates the strong position of our research teams at the national level and the recognition of our scientific skills.

In parallel with the scientific dynamic, we are also striving to improve our work together with the continuous help of the support teams from the UMRs and the central level of the Institute. We will pay particular attention to the quality of life at work by continuing the actions begun in 2022.

For the year 2023, I hope that the whole IRIG will develop further in order to better support the Institute's scientific projects and its involvement in major issues. Actions to promote our quality of life at work, an essential element to support our activities, will be pursued for the benefit of each of us.

I look forward to seeing you on February 3 for our IRIG annual meeting, which will give us a chance to discuss our successes and projects.

I wish you all, IRIG staff but also all our partners, the readers of this newsletter, my best wishes for this New Year 2023. May it be rich in success in your personal and professional endeavors, may it bring you joy and serenity.

Happy New Year to all of you!



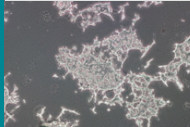
Pascale Bayle-Guillemaud, Head of the
Interdisciplinary Research Institute of Grenoble

At the front page of IRIG

Magnetic microparticles to stimulate insulin secretion

Isolated, or contained in a polymer film, the particles placed on the surface of the pancreatic beta cells, cause the secretion of insulin, by vibration effect. They could eventually form part of an artificial pancreas.

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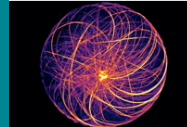
Marie Carrière
SYMMEs

Nanoscale, 2022

Towards the control of the polarity of an artificial cell

Researchers have succeeded in combining in a cell-sized compartment the dynamics of two essential components of the cell skeleton: microtubules and actin filaments, and their contribution to centrosome positioning.

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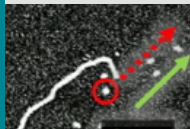
Laurent Blanchoin
LPCV

EMBO Journal, 2022

First manipulation of the chirality of magnetic skyrmions by a gate voltage

For the first time, researchers have succeeded in modifying the chirality of skyrmions. This key parameter is controlled by applying a gate voltage, that promote the direction of movement of the skyrmions within the electronic device.

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Hélène Béa
Spintec

Nature Communications, 2022

Top coherence time for a hole spin in natural silicon

In the race to create a quantum computer, researchers have demonstrated that there is an optimal configuration to bring the coherence times of hole spins closer to those of electron spins. The aim is to be able to initialize, read and manipulate the quantum bits or qubits.

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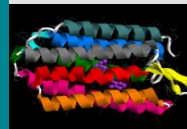
Romain Maurand
Pheliqs
Yann-Michel Niquet
MEM

Nature Nanotechnology, 2022

Proton wires play key role in the mechanism of proton transporters

The chains of hydrogen bonds (CHBs) and low-barrier hydrogen bonds (LBHBs) serve as proton pathways of the light-driven proton pump bacteriorhodopsin. They also are indispensable for long-range communications, signaling and proton storage in proteins.

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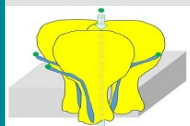
Valentin Gordeliy
IBS

Journal of Biological Chemistry, 2022

Membrane protein platforms for metal efflux in certain bacteria

Metal resistance in some bacteria may involve membrane platforms, a new concept in the metallobiology of prokaryotes. The results also open new perspectives for combating pathogenic bacteria by targeting their resistance mechanisms to metal stresses.

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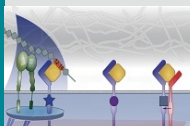
Patrice Catty
CBM

Nature Communications, 2022

Spatial organization of growth factor receptors in the anchor zones of a cell

High-resolution dynamic imaging, combined with optogenetics and biomaterials, can identify growth factor receptors in areas where the cell anchors with the extracellular matrix.

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Catherine Picart
Biosanté

Corinne Albiges-Rizo
IAB

Journal of Cell Biology, 2022

Prize

Malene JENSEN laureate
Impulscience® Program 2022 of
Bettencourt Schueller Fondation



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Other scientific news of the laboratories

	<p>Bilinear magnetoresistance in HgTe topological insulator</p> <p>READ MORE</p>		<p>Electronics: A step towards the control of skyrmions</p> <p>READ MORE</p>
	<p>Observation of skyrmions in synthetic antiferromagnetic and their nucleation using current and light</p> <p>READ MORE</p>		<p>Bright and dark states of two distant macrospins strongly coupled by phonons</p> <p>READ MORE</p>
	<p>Watch your steps while growing nanowires</p> <p>READ MORE</p>		

<p>Biology and Biotechnology for Health</p> <p>UMR_S 1292 CEA-Inserm-UGA Biosante-lab.fr/en</p>	<p>Biosciences and bioengineering for Health</p> <p>UMR_S 1292 CEA-Inserm-UGA Bge-lab.fr/en</p>	<p>Chemistry and Biology of Metals</p> <p>UMR 5249 CEA-CNRS-UGA CBM-lab.fr/en</p>	<p>Institut de Biologie Structurale</p> <p>UMR 5075 CEA-CNRS-UGA IBS.fr/en</p>	<p>Modeling and Exploration of Materials</p> <p>UMR CEA-UGA MEM-lab.fr/en</p>
<p>Quantum Photonics, Electronics and Engineering</p> <p>UMR CEA-UGA Pheligs.fr/en</p>	<p>Cell & Plant Physiology</p> <p>UMR CEA-CNRS-UGA-Inrae LPCV.fr/en</p>	<p>Low Temperature Systems Department</p> <p>UMR CEA-UGA d-SBT.fr/en</p>	<p>Spintronics and Component Technology</p> <p>UMR 8191 CEA-CNRS-UGA-GINP Spintec.fr</p>	<p>Molecular Systems and nanoMaterials for Energy and Health</p> <p>UMR 5819 CEA-CNRS-UGA Symmes.fr/en</p>

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