

# Scientific Newsletter

SUMMER 2024

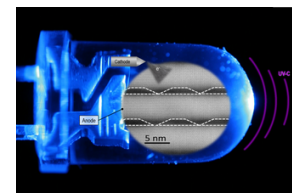


## At the front page of IRIG

### Towards safer UV disinfection with advanced AlGaIn semiconductor solutions

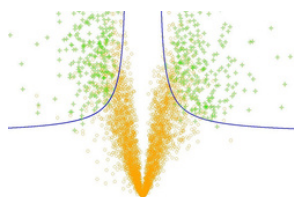
Far UV-C lamps are a major innovation incorporating nanometric quantum dots of gallium nitride and aluminium. They guarantee high levels of disinfection over a range of wavelengths that are harmless to humans.

**Eva Monroy** | [Pheliqs](#) | [ACS Nano](#) 2024



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### Restricting false discoveries in proteomics and omics biology with rigorous and flexible frameworks

Researchers at IRIG are adapting high-dimensional statistic theories to improve biomarker candidate selection in proteomics and omics biology.

**Thomas Burger** | [BGE](#) | [Nature Communications](#) 2024

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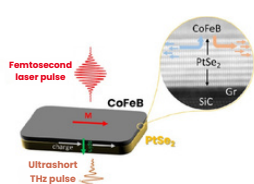
### Characterization of a new plant-specific transcription factor

ALOG proteins are plant-specific transcription factors that play important roles in many species. They have been the subject of major biochemical and structural characterizations carried out by teams from IRIG, ESRF and the University of Milan. This essential work will help to understand their role in many species of agronomic interest, such as pea, rice and tomatoe.

**François Parcy** | [LPCV](#) | [Proceedings of the National Academy of Sciences](#) 2024



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### THz emission: a tool for studying the spintronic properties of 2D materials

To manufacture original, intense and compact THz sources, researchers at IRIG [Collaboration] have fabricated single-crystal 2D materials coated with a magnetic layer. These sources make it possible to identify and quantify the mechanisms for converting spin current into charge current.

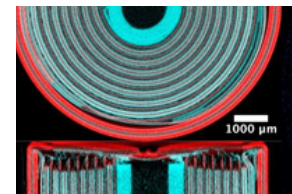
**Matthieu Jamet** | [SPINTEC](#) | [Advanced Materials](#) 2024

[On IRIG website](#)

### Critical deformation of Li-Ion batteries

Researchers at IRIG involved in an international consortium of public institutions CEA-ILL-ESRF (France) Materials Center Leoben (Austria) and the manufacturer Varta (Austria) have determined the cause of the premature degradation of the Li-ion batteries. They suggest better control of the electrode manufacturing stage to prevent it.

**Sandrine Lyonnard** | SyMMES | Energy & Environmental Science 2024



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### A cryogenic plant for the MINERVA accelerator

Researchers at IRIG have carried out preliminary studies and written the specifications for the cryogenic plant for the future MINERVA Linac accelerator, the first phase of the MYRRHA project in Mol, Belgium. This cryogenic plant for cooling the proton accelerator at a temperature of 2 Kelvin will be delivered in 2028.

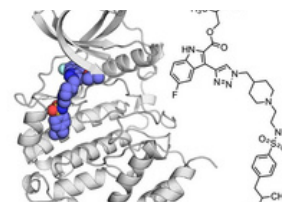
**Frédéric Michel** | DSBT | CEC-ICMC 2023

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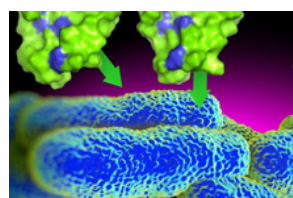
### New anti-cancer treatment targeting a protein kinase

To develop new treatments, researchers at IRIG are targeting inhibition of the protein kinase that can induce programmed death in cancer cells. This could reverse the development of tumours in cancer patients.

**Claude Cochet** | Biosanté | iScience 2024



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### New natural antimicrobials in the fight against antibiotic resistance

To counter antibiotic resistance, researchers at IRIG are studying new natural molecules such as Ruminococcins C which are highly stable under physiological conditions, effective at very low doses and of low toxicity.

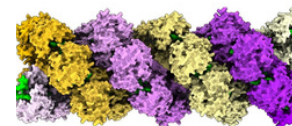
**Victor Duarte** | LCBM | iScience 2023

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### Molecular insights into the Influenza virus genome organization

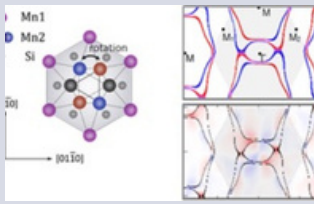
Scientists at IRIG have observed the interactions between the influenza virus genome and associated proteins at a 0.5 nanometers resolution thus enabling a better understanding of the mechanisms underlying the replication of the virus with high pandemic potential.

**Thibaut Crépin** | IBS | Science Advances 2023



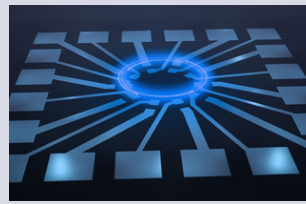
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# Other scientific news from laboratories



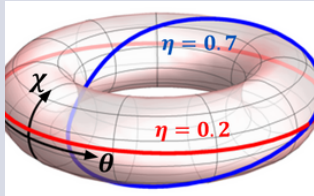
A new altermagnetic material with remarkable properties for spintronics

[On SPINTEC website](#)



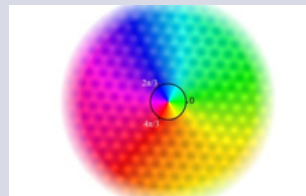
More topology in quantum electronic circuits

[On SPINTEC website](#)



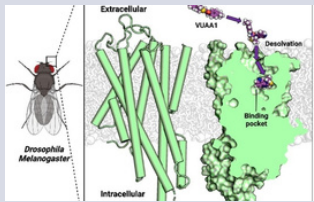
Manipulate coherent quantum states by measurements

[On PHELIQS website](#)



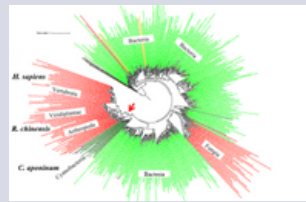
Electron twist in the Kekulé structure of graphene

[On PHELIQS website](#)



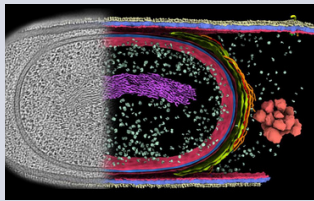
Insect's olfaction: molecular caving in a co-receptor

[On IBS website](#)



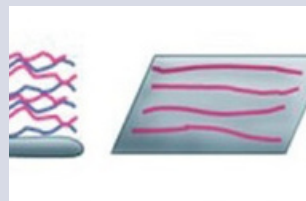
The ancient cyanobacterial part of our genome and its major consequences for our evolution

[On IBS website](#)



Cryo-FIB tomography reveals the assembly of protective cellular structures during bacterial spore development

[On IBS website](#)

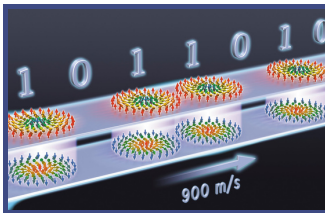


Development of layer-by-layer films for regenerative medicine and cell signalling studies: application to bone tissue engineering

[On BIOSANTE website](#)



# Press releases – Prizes – Others



Skyrmions move at record speeds: A step towards the computing of the future

[on IRIG website](#)



Martin Blackledge  
2024 Ivano Bertini Prize

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Clément Atlan  
AFC 2024 AFC 2024 Thesis Prize

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Manuel Théry  
Chair of excellence in Biology/Health

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