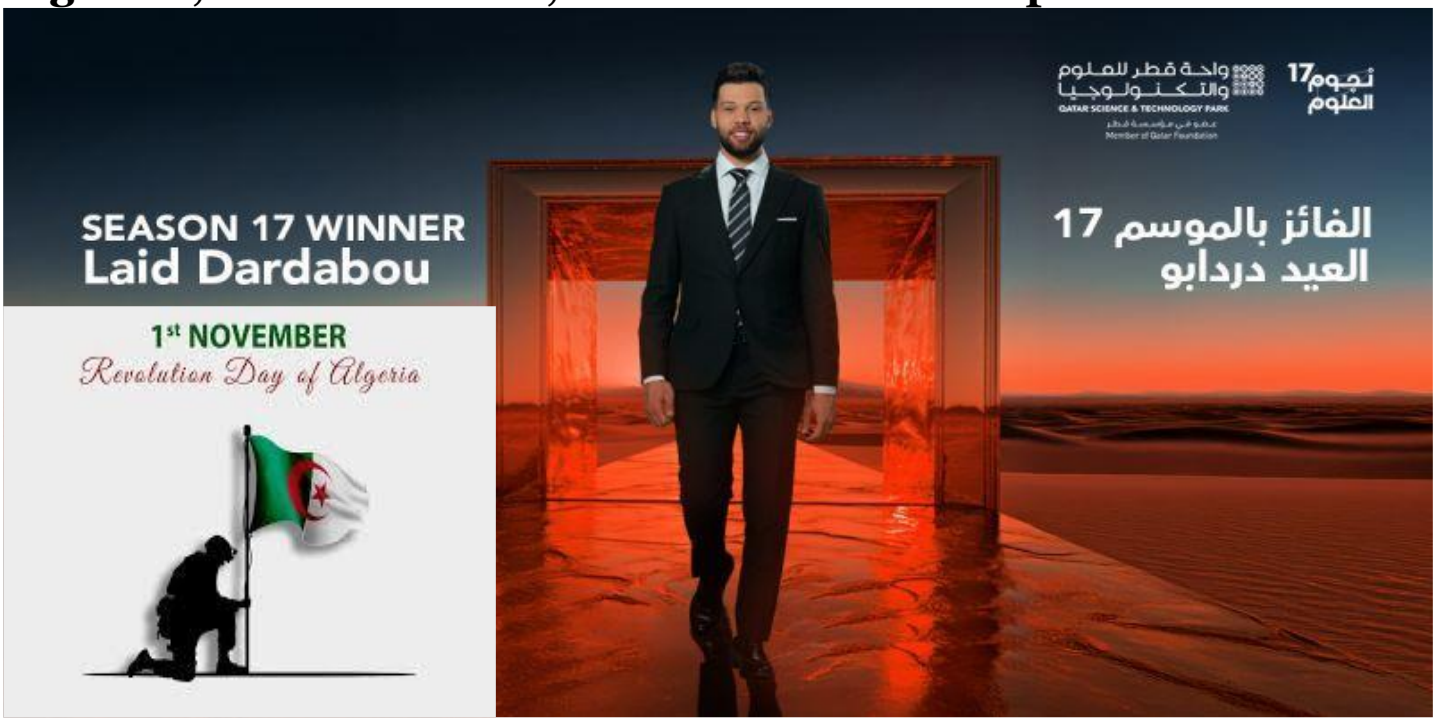
Patient Wellness First

Issue: 1 November 2025

BioSciTech biweekly NEWS

NEWS & COMMENTARIES

Algerian, Laid Dardabou, was crowned the "Top Arab Innovator"



Algerian, Laid Dardabou, was crowned the **"Top Arab Innovator"** in October 2025 at the conclusion of Season 17 of Qatar Foundation's *Stars of Science* competition. Laid Dardabou won for his invention called "ViDa," a smartwatch-integrated system that estimates Vitamin D levels to help users take preventive action against potential mental health symptoms. Born and raised in Algeria, Dardabou was always fuelled by questions. That curiosity led him through a challenging academic journey earning an a title of innovator.

https://www.starsofscience.com/innovators/laid-dardabou

As an immigrant scientist in the U.S., travel bans and visa uncertainty are taking a toll

By Mariana Gelambi

On a warm June evening, I sat alone in my house, sobbing as I watched a choppy, pixelated livestream of my mother's funeral. Thousands of kilometers away in Venezuela, my family grieved together while I remained in the United States, unable to travel because of immigration restrictions. I tried to tell my 17-month-old son I was sad, but not because of him. I was heartbroken and overwhelmed with guilt for not being there. I kept asking myself whether choosing a career in science, so far from home, had been the right decision. I felt a little like the species I study as a postdoc: the spotted lanternfly, an invasive insect that threatens U.S. ecosystems. I, too, was unwelcome and out of place.

https://www.science.org/content/article/immigrant-scientist-u-s-travel-bans-and-visa-uncertainty-are-taking-toll

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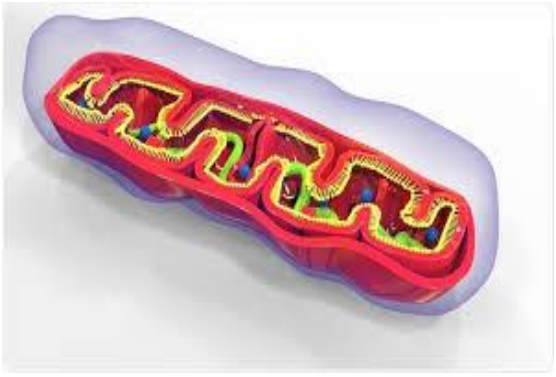
SELECTED PUBLICATIONS

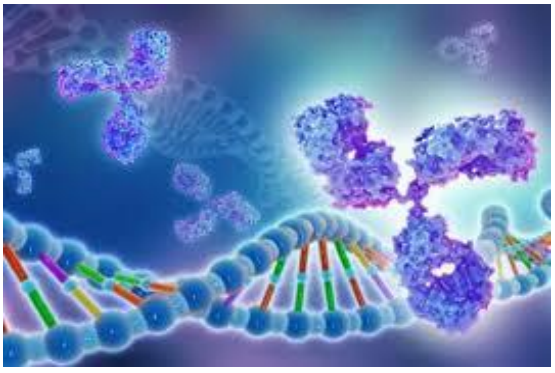


Mammalian mitohormesis: from mitochondrial stressors to organismal benefits

Amanda L Gunawan, Irene Liparulo and Andreas Stahl, 2025

https://doi.org/10.1038/s44318-025-00549-3

Mitochondria play a crucial role in maintaining homeostasis by triggering adaptive responses to stressors. These responses, including the unfolded protein response and integrated stress response, manage mitochondrial proteostasis and restore cellular function. Mitohormesis, the beneficial effects of low-level mitochondrial stress, has been studied in mammalian models. Targeting mitohormesis for therapeutic benefit could transform the treatment of diseases associated with mitochondrial stress in humans.

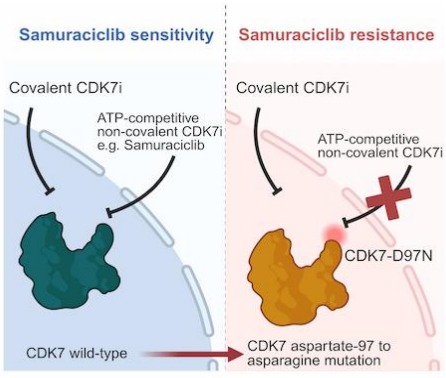


Host cell and viral protease targets of human SERPINs identified by in silico docking

Joaquin Rodriguez Galvan et al., 2025

https://doi.org/10.1038/s44318-025-00546-6

Serine protease inhibitors (SERPINs) play a role in various diseases and physiological processes. Their role in viral infections is poorly understood. A study shows widespread human SERPIN expression in response to respiratory virus infections. In silico docking confirmed known targets and predicted new interactions. PAI-1 and PAI-2 were identified as antiviral SERPINs, offering potential therapeutic interventions.



Resistance to CDK7 inhibitors directed by acquired mutation of a conserved residue in cancer cells

Chun-Fui Lai et al., 2025

https://doi.org/10.1038/s44318-025-00554-6

CDK7, a key cancer target, plays a crucial role in cell cycle progression and transcription. Several CDK7 inhibitors are currently in clinical trials. A study on prostate cancer cells found resistant cells with a single base change in the CDK7 gene, Asp97 to Asn (D97N). This mutation promotes resistance to drugs inhibiting CDKs, highlighting the importance of early detection of tumor evolution towards resistance in cancer therapies.

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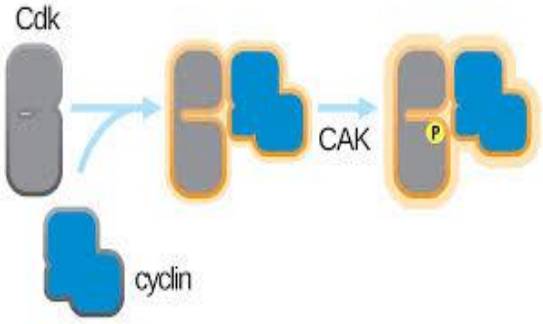
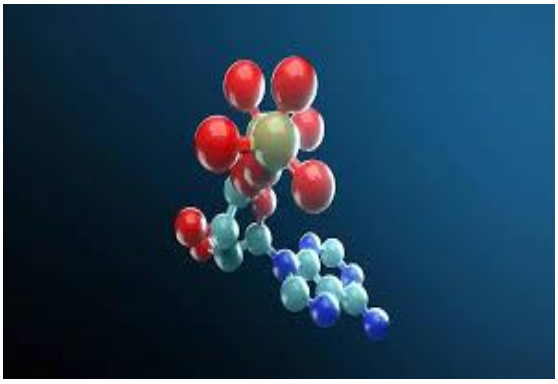


Structural basis of T-loop–independent recognition and activation of CDKs by the CDK-activating kinase

Victoria I. Cushing et al., 2025

DOI: 10.1126/science.adw0053

The study reveals that the CDK-activating kinase (CAK) recognizes and activates CDKs through a T-loop-independent kinase-kinase interface. High-resolution structures of CAK in complex with CDK2 and CDK2-cyclin A2 reveal a general architecture of CAK-CDK complexes, enhancing our understanding of cell cycle regulation and kinase signaling cascades.



Generative AI for navigating synthesizable chemical space

Wenhao Gao et al., 2025

DOI:10.1073/pnas.2415665122

SynFormer is a generative framework that ensures every generated molecule has a viable synthetic pathway, allowing for the design of analogs and optimization of molecular properties while maintaining synthetic feasibility. This can accelerate the discovery of small organic molecules in various fields.

Dynamic sensor selection for biomarker discovery

Joshua Pickard et al., 2025

DOI:10.1073/pnas.2501324122

Advances in biotechnologies have improved the resolution of biological systems, but identifying and interpreting biological signals remains a challenge. Observability theory is applied to establish a methodology for biomarker selection, identifying biologically meaningful sensors in transcriptomics data. Dynamic sensor selection maximizes observability over time, enabling observability in changing system dynamics. This approach extends to multiple data modalities, including agriculture, biomanufacturing, and neural systems.

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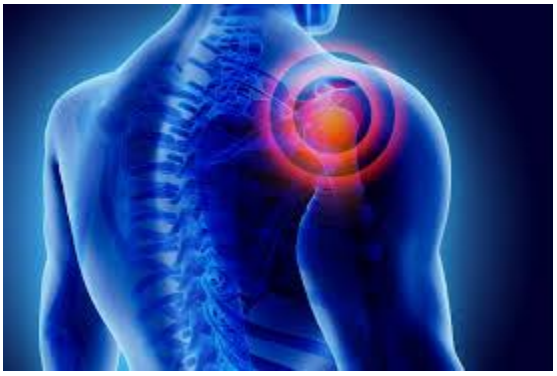
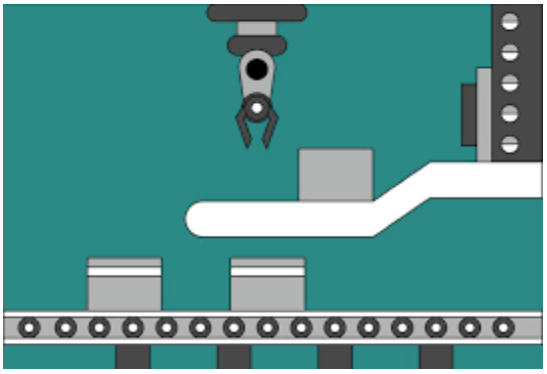


Nanomedicines targeting protease-activated receptor 2 in endosomes provide sustained analgesia

Shavonne L. Teng et al., 2025

DOI:10.1073/pnas.2412687122

Nonopioid pain treatments are needed, targeting PAR2 endosomal signaling in the colon. Nanoparticles (NPs) can be delivered to endosomes to reverse pain signals. NP-encapsulated AZ3451 reversed pain in mice and normalized behavior in inflammatory bowel disease models, suggesting nanomedicines can effectively relieve visceral pain.



Design of soluble Notch agonists that drive T cell development and boost immunity

Rubul Mout et al., 2025

DOI: 10.1016/j.cell.2025.07.009

Researchers have developed a new strategy for developing disease therapeutics by designing receptor agonists that control cell signaling. They have used computationally designed protein complexes to generate soluble cytokine-like Notch agonists, which promote cell-cell bridging, cluster Notch receptors, and activate receptor signaling. These agonists drive T cell differentiation, stimulate cytokine production, and expand antigen-specific CD4+ T cells in mice. These de-novo-designed ligands can be applied to optimize in vitro cell differentiation and advance immunotherapy development.

Identification of gut microbial bile acid metabolic enzymes via an AI-assisted pipeline

Yong Ding et al., 2025

DOI: 10.1016/j.cell.2025.07.017

Researchers developed BEAUT, an AI-assisted tool that predicted over 600,000 bile acid metabolic enzymes and created the HGBME database. The tool identified new enzymes including MABH and ADS, with ADS producing a novel bile acid called 3-acetoDCA that regulates gut microbial interactions. This work provides new insights into the relationship between microbial bile acids and human health from an enzymatic perspective.

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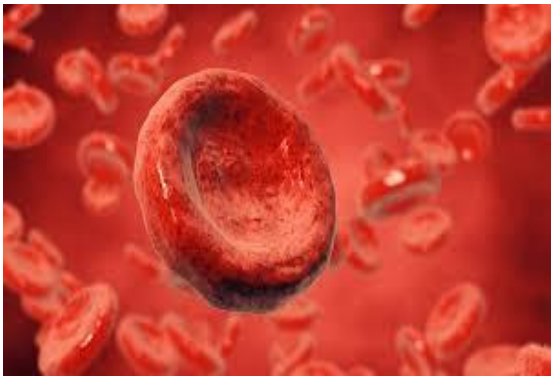
Inter- and intra-tumoral ALDH1 heterogeneity in breast cancer identifies therapeutic opportunities for ALDH1A-specific inhibitors

Raquel Pequerul et al., 2025

DOI: 10.1016/j.chembiol.2025.09.003

Researchers identified distinct ALDH1A isoform expression patterns in basal-like breast cancer, with ALDH1A3 predominating in epithelial cells and associated with poor outcomes. They developed ABD0171, a targeted ALDH1A inhibitor that disrupts oncogenic signaling and demonstrates strong antitumor effects in preclinical studies. This approach provides a mechanism-based treatment strategy for aggressive breast cancers by targeting specific ALDH1A isoforms based on tumor characteristics.



Stimulated thyroid hormone synthesis machinery drives thyrocyte cell death independent of ER stress

Crystal Young et al., 2025

https://doi.org/10.1172/JCI187044.

Researchers found that thyroid cell death in patients and animal models with mutant thyroglobulin protein was previously attributed to endoplasmic reticulum stress. However, studies using knockout mice completely lacking thyroglobulin showed that cell death occurs even without ER stress. The actual cause is excessive iodination activity stimulated by TSH hormone. When iodination is blocked through genetic modification, drug treatment, or iodine deficiency, thyroid cell death is prevented, revealing that renegade iodination rather than ER stress is the primary mechanism killing thyroid cells in thyroglobulin-deficient conditions.

A PP2A molecular glue overcomes ras/mapk inhibitor resistance in kras-mutant non-small cell lung cancer

Brynne Raines et al., 2025

https://doi.org/10.1172/JCI193790

RAS/MAPK inhibitors for treating metastatic KRAS-mutant NSCLC often fail due to resistance caused by disrupted PP2A phosphatase activity. Researchers developed RPT04402, a PP2A molecular glue that stabilizes PP2A complexes, and combined it with RAS/MAPK inhibitors. This combination enhanced cancer cell death, induced tumor regression in mice, extended survival, and delayed treatment resistance, offering a promising new therapeutic approach for overcoming drug resistance in lung cancer.

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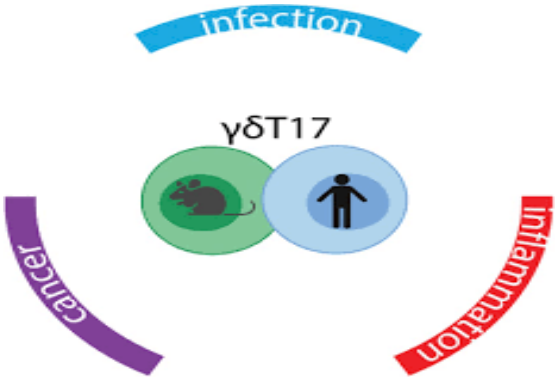

IL-17-producing γδ T cells in the tumor microenvironment promote radioresistance in mice

Yue Deng et al., 2025

https://doi.org/10.1172/JCI193945

Researchers discovered that γδ T cells increase in tumors after radiotherapy and promote treatment resistance by producing IL-17A, which recruits immunosuppressive cells and inhibits immune responses. Radiotherapy triggers tumor-derived DNA particles that activate macrophages to release CCL20, attracting these resistant γδ T cells. Targeting γδ T cells or IL-17A improves radiation effectiveness and enhances combination therapy with anti-PD-1 treatment, offering new approaches to overcome radioresistance.

RECOMMENDED EVENTS & JOB CORNER

Online info session: Postgraduate courses in Nanotechnology

Date & Time

Nov 5, 2025 04:00 AM in Pacific Time (US and Canada)

Description

Join us for an online info session to learn more about our postgraduate courses in Nanotechnology. Led by Course Directors Professor Robert Carlisle and Dr Christiane Norenberg, this will be your chance to learn more about these part-time, transformative programmes and have your questions answered.

https://us02web.zoom.us/webinar/register/4217606210570/WN_rCWSeeCiREac47OXEwu_LQ#/registration

UNIVERSITY OF CAMBRIDGE

AZ funded non-clinical PhD studentship

Project Title: Robust hypothalamic cellular models of neurometabolic disease

We invite highly motivated students to apply for a fully funded 4-year PhD studentship jointly supervised by Dr. Florian Merkle (University of Cambridge, Pharmacology) and Dr. Bilada Bilican and Dr. Alice Adriaenssens (AstraZeneca, Gothenburg and Cambridge). The successful applicant will have the opportunity to work across both sites.

https://www.cam.ac.uk/jobs/az-funded-non-clinical-phd-studentship-pl47443

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ASCA WEBINARS: CALL FOR REGISTRATION

THE FUTURE OF BIOTECHNOLOGY MOVING EAST: INNOVATION AND CREATIVITY MIGRATION

Date : 15 November 2025

Time : 4:00 PM (DZ)

Moderator

MOHAMED BOUDJELAL, MBA, PhD
Director, Drug Discovery and Development
Chairman, Medical Research Core Facility and Platforms
King Abdullah International Medical Research Center (KAIMRC), Riyadh, KSA

Meet Our Speakers

PROF. SAID DERMINE
Senior Scientist & Director
Translational Cancer Research Facility
National Center for Cancer Care & Research Clinical
Hamad Medical Corporation (HMC), Doha, Qatar
Presentation Title: ***"Talents acquisition"***

WASFI ALAZZAM, PhD
CMC Development & Supply Chain
Digitalization | Clinical | Biologics
Downingtown, Pennsylvania, USA
Presentation Title: ***"Asia's Biotech Boom: Innovation, Operational Drivers, and Investment Opportunities in China and the Gulf"***

PROF. RAAFAT EL-GEWELY
Professor Emeritus
University of Tromso, Norway
Presentation Title: ***"Essential tools for biotechnology to take roots in the Gulf and Asian economies"***

TIANYI ZHANG, PhD
Business Development Director
Executive Assistant to the CEO
Corregene Biotechnology Co. Ltd
Presentation Title: ***"Technology transfer and Bio-Economy"***

About

As the world evolves, we are witnessing a significant shift in talent, knowledge, and productivity moving eastward. This trend is evident in the field of biotechnology, where the BioEconomy, originally rooted in the West, is now increasingly thriving in Asia and the Gulf region.

To delve deeper into these influences and engage in a robust discussion about the future of biotechnology, we invite you to this panel discussion with experts in:

Biotechnology-BioEconomy | Investment strategies | Legal frameworks | Talent acquisition | Bio-strategy

For more information, please feel free to reach out to admin@algeriansca-dz.org

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