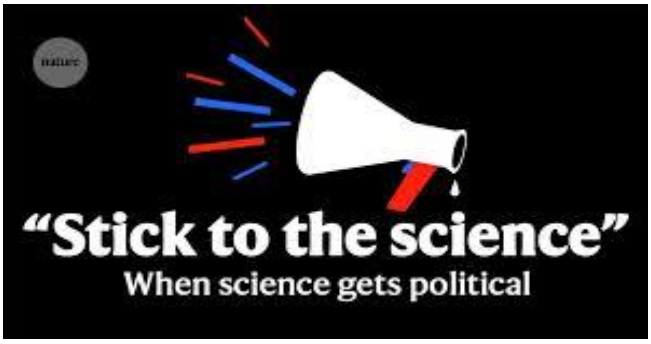
NEWS & COMMENTARIES



READ THROUGH Scientist Mimicked Today's Politics

In the late 1960s, American ethologist Dr. John B. Calhoun built what he called a "Mouse Paradise" — a perfectly controlled world with unlimited food, water, and shelter. No predators. No scarcity. No fear. Only abundance.

At first it was heaven. The mice thrived, multiplied, and built their tiny cities.

- But when their population swelled past 600, something began to unravel.
- The strong claimed the best nesting areas.
- Weaker males were bullied into corners.
- Mothers stopped caring for their young — some even turned against them.
- Violence erupted. Mating ceased.
- And gradually, the colony lost its will to live. Though the food never ran out, purpose did.

The final generations grew passive and detached — grooming endlessly, avoiding contact, showing no interest in survival or connection. Calhoun called this stage "the behavioral sink" — a collapse not of body, but of spirit.

When the last mouse died, the habitat still overflowed with everything they could ever need.

Calhoun repeated this experiment 25 times, and every time, the outcome was the same. His conclusion echoed far beyond the cages: **"When a population loses purpose, meaning, and social bonds — it dies long before its body does."**

Medals for Algerian students who won gold in the International Mathematical Olympiad

The Minister of Higher Education and Scientific Research, Kamal Badari, awarded the Ministry's Medals of Merit for the benefit of outstanding students who won the International Mathematics Olympiad in Moscow - Russian Federation. The President of the Republic congratulated the team of students of the National Higher School of Mathematics on this exceptional achievement in the Russian capital, Moscow, after they were crowned with gold and first place in the International Mathematics Olympiad out of 40 countries that participated in the competition. The team of crowned students includes

Ben Malouka Mohamed Amir, Ait Hamdouch Haitham, Boufdjighen Abdelnasser, Hammadi Abdelilah

https://www.horizons.dz/?p=397903&lang=en#:~:text=The%20Minister%20of%20Higher%20Education,Print

Listen to the Expert: Clinical Trials in Saudi Arabia Dr. Majed Al Jeraisy

I am pleased to share my latest podcast episode on clinical trials and the future of research in Saudi Arabia. In this discussion, I explore the challenges, opportunities, and strategic directions needed to advance our national clinical research ecosystem.

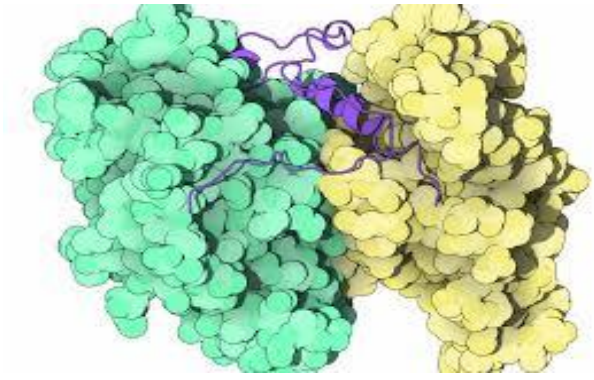
As our nation accelerates health research and innovation, clinical trials remain a cornerstone for translating discoveries into real patient benefit. In the episode, I highlight the enablers, bottlenecks, and the critical role of national coordination through the Saudi NIH.

https://x.com/profaljeraisy/status/1995437569388265845?s=56

Excelsior Sciences Gets $95 Million for Drug Reshoring Push

Excelsior Sciences has secured $95 million to produce drug compounds in the U.S., part of an industry drive to reduce dependence on other nations for materials used in medications.

https://www.wsj.com/articles/excelsior-sciences-gets-95-million-for-drug-reshoring-push-50b9bcc5



Imperial drug candidate for breast cancer delivers positive Phase 2 results

A drug candidate discovered at Imperial has shown promise for treating breast cancers that have stopped responding to other therapies in a Phase 2 trial.

The encouraging trial results were announced yesterday by Carrick Therapeutics, a biopharmaceutical company that is clinically developing the candidate, named samuraciclib. Samuraciclib is designed to treat cases of advanced HER2-negative breast cancer that are no longer responding to fulvestrant, a drug that prevents cancer cells from receiving the oestrogen that many cancers need to grow.

https://www.imperial.ac.uk/news/articles/2025/imperial-drug-candidate-for-treatment-resistant-breast-cancer-delivers-positive-results-in-phase-2-trial/

Patient Wellness First

Issue: 15 December 2025

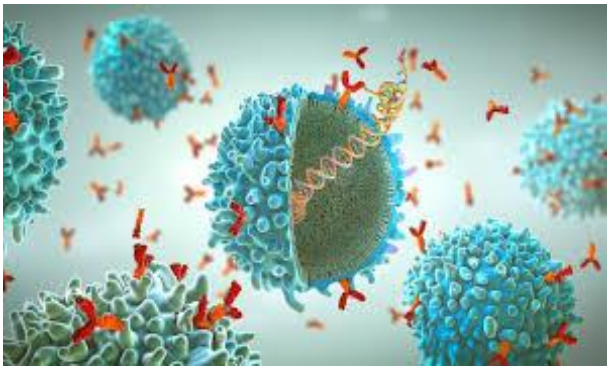
BioSciTech biweekly NEWS

Replicate Bioscience and Instituto Butantan Enter Collaborative Agreement to Develop and Commercialize Replicate's Self-Replicating RNA (srRNA) Rabies Vaccine in Latin America

Replicate Bioscience, a clinical-stage company pioneering novel self-replicating RNA (srRNA) technology for applications across infectious disease, immunology, and other therapeutic areas, and Instituto Butantan, Sao Paulo, Brazil, a leading non-profit producer of immunobiologic products for Brazil and other markets, today announced a collaboration agreement under which Instituto Butantan will obtain exclusive rights to develop and commercialize Replicate's novel srRNA rabies vaccine RBI-4000 in Brazil and other Latin American countries.

https://replicatebioscience.com/news-publications/

SELECTED PUBLICATIONS

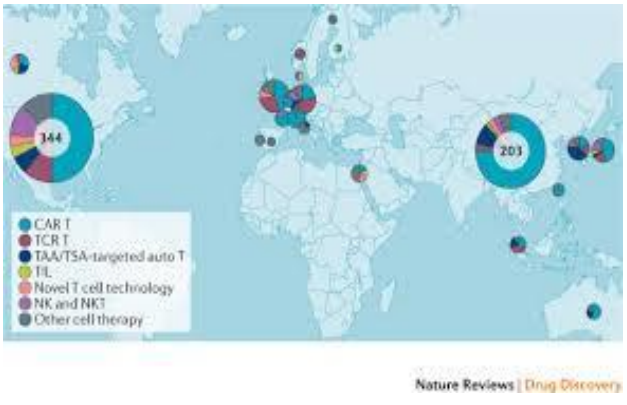


Dealmaking focuses on bright spots in the cell and gene therapy landscape

By Peter Kirkpatrick, 2025

In the past year, there have been major deals in cell and gene therapy due to advancements in in vivo cell therapies and viral vector delivery. However, many companies like Takeda and Novo Nordisk have scaled back their efforts, facing challenges and safety concerns, particularly with Sarepta's gene therapy Elevidys, leading to a decline in licensing deals.

https://www.nature.com/biopharmdeal/volumes/19/issues/4



Cancer cell therapies: global clinical trial trends and emerging directions

By Fahad Benthani, Samik Upadhaya & Alicia Zhou, 2025

The cancer cell therapy field is changing quickly. In 2024, TIL and TCR therapies received their first approvals, expanding options beyond CAR-T products. By June 2025, over 6,000 cell therapy trials were registered, showing a shift from rapid growth to steady consolidation. Trends include variability in CAR-T development, increased target diversity, more focus on solid tumours, and stability in allogeneic therapies, while autologous therapies are declining. The text examines these trends in detail.

https://www.nature.com/articles/d41573-025-00180-1

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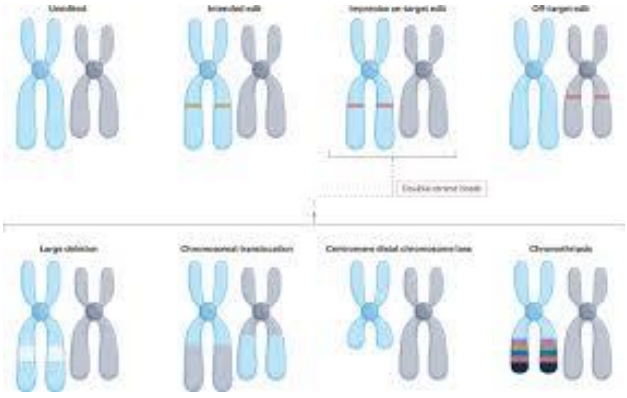
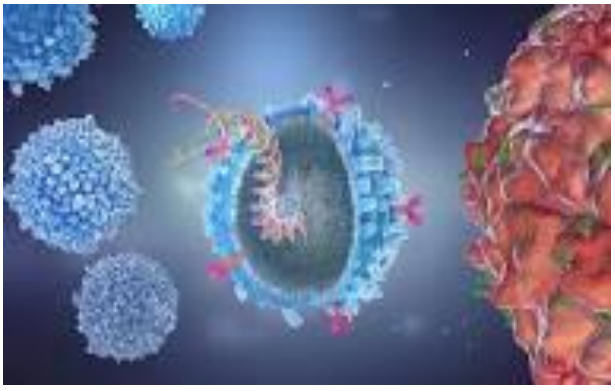


CRISPR-based therapeutic genome editing for inherited blood disorders

Sébastien Levesque & Daniel E. Bauer, 2025

DOI:10.1038/s41573-025-01236-y

Therapeutic genome editing is set to change medicine by using CRISPR-based tools to fix mutations or create protective genes. These therapies are particularly useful for blood and immune disorders, allowing for the use of modified haematopoietic stem cells (HSCs) that can be returned to patients to improve their blood systems. The first FDA-approved CRISPR therapy, exa-cel, targets sickle cell disease and β-thalassaemia. However, delivering gene edits effectively and overcoming challenges with HSCs remains difficult. This Review discusses current genome editing technologies and addresses ongoing issues in targeting HSCs for future treatments.



In vivo chimeric antigen receptor (CAR)-T cell therapy

Adrian Bot , 2025

DOI:10.1038/s41573-025-01291-5

Chimeric antigen receptor (CAR)-T cell therapy has improved patient outcomes in blood cancers but faces challenges like complicated manufacturing and variable effectiveness. In vivo CAR-T cell engineering aims to create these cells directly in patients, avoiding complex procedures. Advances in virology, RNA medicines, and nanotechnology have enabled the use of systems like lentiviral vectors and lipid nanoparticles to deliver CAR genes to T cells. Early clinical trials show promise in effectiveness and potential for wider use, even in autoimmune diseases such as systemic lupus erythematosus.

Human organoids as 3D in vitro platforms for drug discovery: opportunities and challenges

Daisong Wang et al., 2025

DOI:10.1038/s41573-025-01317-y

Organoids are 3D structures made from stem cells that mimic the tissue they come from. They offer a better model of human physiology than 2D cell lines, allowing for the study of diseases and drug responses. This Review discusses how organoids are useful in drug discovery, including their creation, applications, and regulatory challenges.

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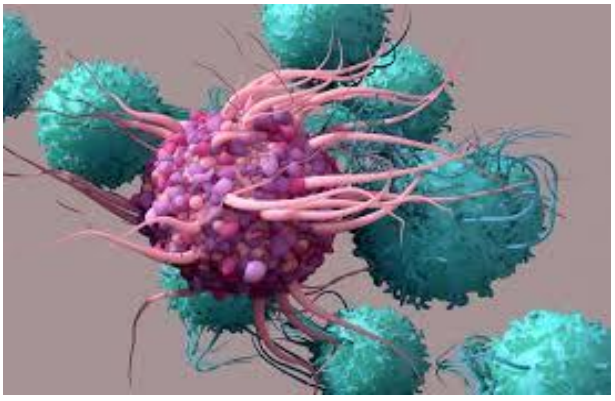
How multispecific molecules are transforming pharmacotherapy

Raymond J. Deshaies , 2025

DOI:10.1038/s41573-025-01262-w

Over the past decades, the pharmaceutical industry has evolved from discovering natural products to designing specific chemical compounds for targeted effects. Recently, a new drug type has emerged: multispecific molecular drugs. These drugs can interact with multiple targets, offering advantages over traditional therapies, such as overcoming biological barriers. I explain how new multispecific drugs are changing expectations in treatment.



Immunogenic cell death unlocks the potential for combined radiation and immunotherapy

Somiya Rauf et al., 2025

DOI:10.1073/pnas.2509875122

Immunogenic cell death (ICD) boosts antitumor immunity by releasing tumor-associated antigens. This study develops a mathematical model to assess ICD's role in improving combined radiotherapy (RT) and macrophage therapy. Results show optimal RT doses enhance ICD and immune activation, with SIRP- knockout macrophages showing the greatest effectiveness.

Drug repurposing screen identifies an HRI activating compound that promotes adaptive mitochondrial remodeling in MFN2-deficient cells

Prerona Bora et al., 2025

DOI :10.1073/pnas.2517552122

Pathogenic variants in the MFN2 gene cause Charcot-Marie-Tooth type 2A (CMT2A), leading to mitochondrial dysfunction. This dysfunction affects mitochondrial structure and function, and there are no current therapies for MFN2-related conditions. A drug repurposing screen identified compounds parogrelil and MBX-2982 that activate the integrated stress response (ISR), helping to improve mitochondrial health. These drugs promoted beneficial changes in mitochondrial shape, movement, and respiration in MFN2-deficient cells, suggesting they may help treat mitochondrial dysfunction in CMT2A and similar conditions.

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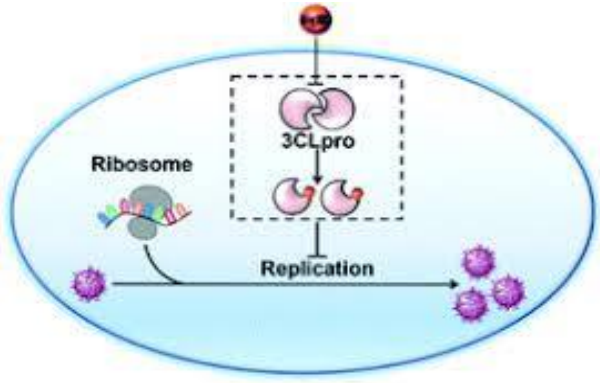

Human coronavirus 3CL protease manipulates host protein STIM1 to facilitate immune evasion

Yoon Young Lee et al., 2025

DOI:10.1073/pnas.2503436122

Coronaviruses depend on their interactions with host proteins for replication and survival. The 3CL protease plays a key role by cutting viral polyproteins and targeting host proteins to weaken immune responses. STIM1 is identified as a target of 3CL protease, producing two fragments that suppress immune functions. The N-terminal fragment inhibits MAVS aggregation, while the C-terminal fragment reduces IKKα-induced p65 activity.

Correlates of HIV-1 control after combination immunotherapy

M. J. Peluso et al., 2025

DOI:10.1038/s41586-025-09929-5

The goal of finding treatments to control HIV without antiretroviral therapy (ART) is very important. Combination immunotherapy methods, including HIV vaccination and the use of broadly neutralizing antibodies (bNAbs), have shown promise in animal studies, but few have been tested in humans. A study involved ten people on ART who received a combination of therapies, including a therapeutic vaccine and bNAbs. Seven participants managed to control the virus after stopping ART.

Randomized, double-blind, placebo-controlled, phase 3 trial to demonstrate lot-to-lot consistency of 3 lots of the simplified formulation of Butantan-dengue vaccine

Érique José Farias et al., 2025

DOI: 10.1016/j.vaccine.2025.127836

The study evaluated the immune response consistency on Day 28 after vaccination with three lots of the simplified Butantan-Dengue Vaccine (Butantan-DV) and the frequency of vaccine-related adverse events compared to placebo. It involved 700 participants aged 18 to 59 years with no previous dengue exposure in non-endemic Southern Brazil. The consistency was determined by analyzing serum neutralizing antibody titers against four dengue serotypes, with 10 out of 12 pairwise comparisons meeting the equivalence endpoint. The overall frequency of vaccine-related adverse events was 90.8% in the Butantan-DV group versus 76% in the placebo group, confirming the safety and equivalence of the vaccine lots. The trial is registered with ClinicalTrials.gov (NCT02406729).

RECOMMENDED EVENTS & JOB CORNER

ESMO Immuno-Oncology Congress 2025, Dec. 10–11, 2025.

This international event provides valuable knowledge: from basic science to translational research and clinical development, cutting-edge science, and excellent networking opportunities.

https://www.sitcancer.org/blogs/keegan-mager/2025/12/12/2025-esmo-io-scientific-highlights

Qatar University Scholarships 2026/27: Fully Funded

International students are required to adhere to the dates listed in the table below to allow the University to complete the necessary procedures in coordination with the relevant authorities in the State of Qatar. These procedures are essential for arranging travel and facilitating enrollment by the first day of classes. Please note: Any delays in these procedures may result in the cancellation of the student's admission.

https://www.qu.edu.qa/en-us/students/admission/graduate/application-timeline#collapse1

Scientist I Gaithersburg, MD ·

Novavax is seeking a highly motivated Scientist to join our growing Antibody Technologies team. The ideal candidate will have a strong background in immunology, oncology, and monoclonal antibody engineering, with additional experience in vaccine research and the application of AI/ML technologies to enhance target identification and antibody discovery. This role will contribute to the design, characterization, and advancement of next-generation vaccines.

https://novavax.wd1.myworkdayjobs.com/Careers/job/Gaithersburg-MD/Scientist-I_JR100808?source=LinkedIn

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