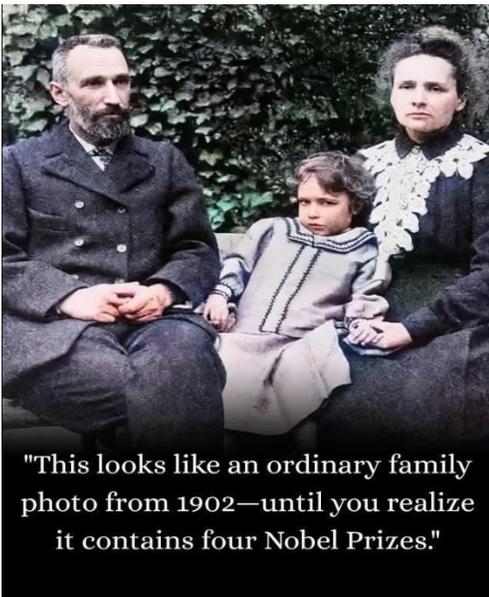


## NEWS &amp; COMMENTARIES



"This looks like an ordinary family photo from 1902—until you realize it contains four Nobel Prizes."

### Three lives: Four Nobel Prizes.

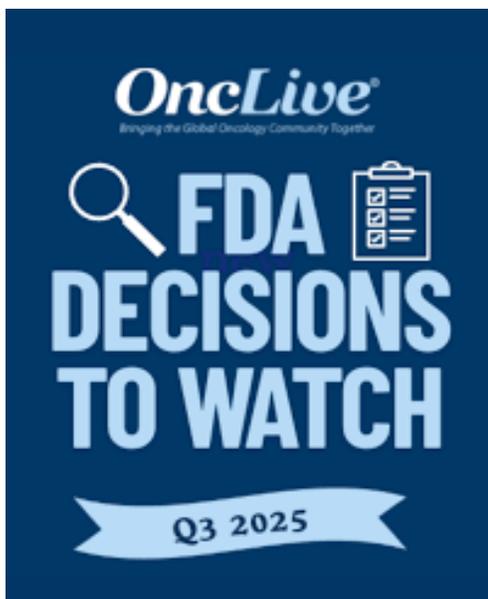
**One family that changed the course of science and proved that brilliance is not inherited, it's inspired.**

**Quoted from Singh Srijan**

[www.linkedin.com/in/srijanpalsingh/](https://www.linkedin.com/in/srijanpalsingh/)

At first glance, it looks like an ordinary family portrait from 1902... a father, a mother, and a baby in her arms. But this single photograph holds four Nobel Prizes. The woman is Marie Curie, still unknown to the world then, but within a year, she would make history as the first woman ever to win a Nobel Prize, and later, the only person to win two Nobel Prizes in two different sciences. The man beside her is Pierre Curie, her partner in science and in life, who insisted that she be recognised as his equal when the world wasn't ready to accept women in laboratories. Together, they discovered radioactivity, giving humanity a new way to see matter

itself. And the baby in her arms? Irène Curie, who would grow up surrounded by the hum of experiments, the glow of radium, and the belief that curiosity had no gender. She would one day win her own Nobel Prize ... continuing the legacy her parents began.



### FDA new drug approvals in Q3 2025

<https://www.nature.com/articles/d41573-025-00170-3>

The third quarter of 2025 delivered a welcome bolus of novel FDA drug approvals, with the 16 approvals in the quarter matching the 16 approvals in total in the first half of the year (Table 1). Furthermore, the commercial expectations for the Q3 cohort are greater: Evaluate Pharma projects 2030 forecasts of >US\$16 billion for these products, well up on the 2030 forecasts previously published for the Q1 and Q2 cohorts (\$9 billion and \$4.8 billion, respectively).

The biggest approval by far of the quarter based on near-term sales expectations is Merck & Co.'s Keytruda Qlex (pembrolizumab and berahyaluronidase alfa), a subcutaneously administered follow-on product from the company's mega-blockbuster PD1 inhibitor Keytruda (pembrolizumab). Keytruda Qlex is part of a strategy to soften the impact of the expected erosion of revenue from the

original intravenous formulation of Keytruda following the entry of biosimilars into the market later in the decade. The 2030 sales forecasts for the product are \$7 billion, although an atypical sales curve can be anticipated given the complex market dynamics.

**SELECTED PUBLICATIONS**



**Modulating the microbiome as an approach to anticancer drug development**

**Jemma Arakelyan et al., 2025**

**DOI :10.1073/pnas.2417269122**

Recent studies indicate that the commensal microbiome can positively influence cancer prognosis. This research identified gold(I) complexes that selectively inhibit harmful bacteria without affecting beneficial Lactobacillus strains, unlike clinically used drugs. In vivo tests showed these complexes altered microbiome compositions favorably and

their anticancer effects depended on microbiome composition and short-chain fatty acid production. Further analysis revealed important gene signaling pathways related to the microbiome, suggesting new directions for developing microbiome-modulating anticancer drugs to enhance treatment outcomes and reduce side effects such as gastrointestinal dysbiosis.



**Genomic and transcriptomic landscape of carcinogenesis in patients with gastric adenocarcinoma and proximal polyposis of the stomach (GAPPS)**

**Chihiro Matsumoto et al., 2025**

**DOI :10.1073/pnas.2427133122**

Gastric adenocarcinoma and proximal polyposis of the stomach (GAPPS) is an autosomal dominant syndrome featuring gastric polyposis with a high risk of adenocarcinoma. This study investigates the genetic

evolution from normal mucosa to polyp and carcinoma in GAPPS using mutational and transcriptomic analyses. Whole-exome and RNA sequencing were conducted on samples from seven GAPPS patients. Findings showed somatic mutations in APC and KRAS, with APC mutations found in both carcinoma and polyp tissues, while KRAS mutations appeared solely in carcinoma.



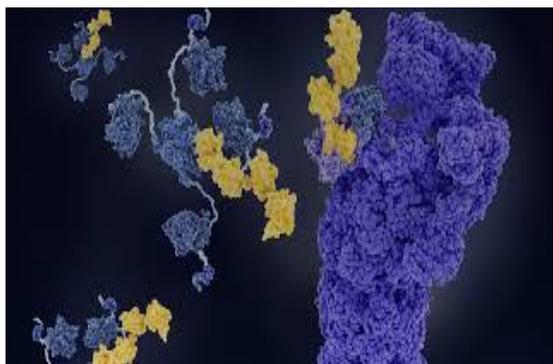
**Nanobody-based recombinant antivenom for cobra, mamba and rinkhals bites**

**Shirin Ahmadi et al., 2025**

**<https://doi.org/10.1038/s41586-025-09661-0>**

Each year, snakebite envenoming results in numerous fatalities and serious injuries in sub-Saharan Africa, with traditional antivenoms being expensive and often ineffective. There is a critical need for innovative therapies. Addressing this challenge, researchers immunized an alpaca and a llama with venoms from various snakes, developing high-affinity

nanobodies. They created an experimental polyvalent recombinant antivenom, which neutralized multiple toxin families and effectively prevented lethal effects from various African elapid snake species, outperforming conventional plasma-derived antivenoms.

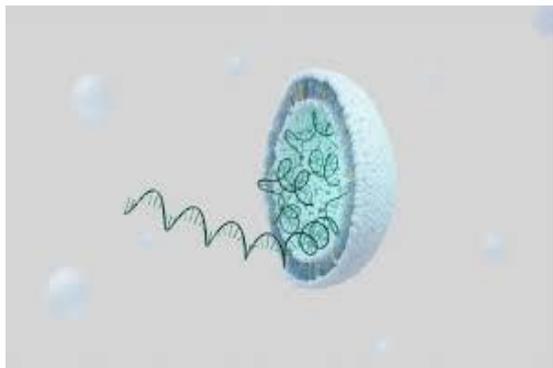


## Mechanisms that matter: unbiased cellular screening for degraders

**Helen E. Burston et al, 2025**

<https://doi.org/10.1038/s44386-025-00028-z>

Recent discoveries have highlighted that small monovalent molecules can leverage a variety of cellular mechanisms to induce degradation of a specific target protein. This perspective exemplifies and contextualizes these mechanisms within drug discovery, with a focus on identification of novel monovalent degraders via cell-based high-throughput screening (HTS) methodologies. Considerations for screening strategies, assay technologies and mechanistic deconvolution are discussed, with emphasis on identification of degrader compounds from diverse compound collections.

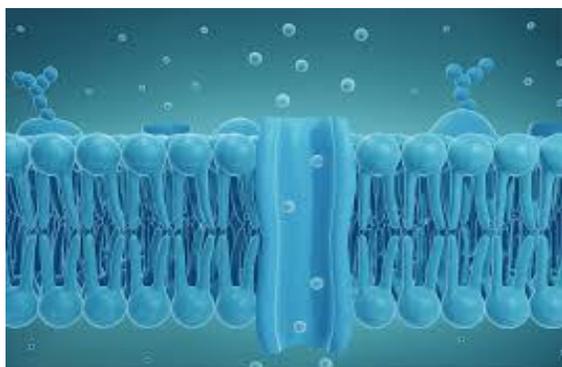


## SARS-CoV-2 mRNA vaccines sensitize tumours to immune checkpoint blockade

**Adam J. Grippin et al., 2025**

<https://doi.org/10.1038/s41586-025-09655-y>

Immune checkpoint inhibitors (ICIs) improve cancer survival but are ineffective in those without pre-existing immunity. Personalized mRNA cancer vaccines can sensitize tumors to ICIs but face manufacturing challenges. This study reveals that SARS-CoV-2 mRNA vaccines can also enhance ICI efficacy by boosting type I interferon production, which activates CD8<sup>+</sup> T cells against tumor antigens. ICI treatment alongside these vaccines is essential for optimal results in immunologically cold tumors, which show increased PD-L1 expression. In humans, SARS-CoV-2 mRNA vaccination within 100 days of starting ICI correlates with improved overall survival. These findings indicate that mRNA vaccines can effectively modulate immunity and sensitize tumors to ICIs.



## De novo design of a peptide modulator to reverse sodium channel dysfunction linked to cardiac arrhythmias and epilepsy

**Ryan Mahling et al., 2025**

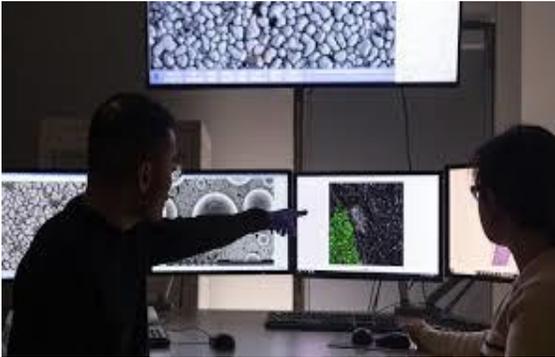
**DOI: 10.1016/j.cell.2025.07.038**

Ion channels are crucial for electrical signaling in excitable cells, influenced by modular proteins tailor-made for specific physiological functions. Engineering synthetic modulators for ion channels, particularly the sodium (NaV) channel, poses challenges. Dysfunction in NaV channels increases late/persistent sodium current (INaL), linked to diseases like cardiac arrhythmias and epilepsy. This study presents the de novo peptide modulator ELIXIR, which selectively inhibits pathogenic INaL, binding to NaV channels with high affinity. It effectively reverses NaV dysfunction in models of these diseases, demonstrating the potential of synthetic ion channel modulators in future therapeutic designs.

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## Tumors hijack macrophages for iron supply to promote bone metastasis and anemia

**Yujiao Han et al., 2025**

DOI: [10.1016/j.cell.2025.08.013](https://doi.org/10.1016/j.cell.2025.08.013)

Bone marrow harbors specialized VCAM1+CD163+CCR3+ macrophages that support erythropoiesis by supplying iron to erythroblasts. In bone metastasis, tumor cells exploit these macrophages to obtain iron, impairing erythropoiesis and causing anemia, while producing hemoglobin themselves under hypoxia. Similar macrophages and elevated HBB

expression are found in human bone metastases, linking iron metabolism, immune cells, and tumor plasticity in metastasis and anemia



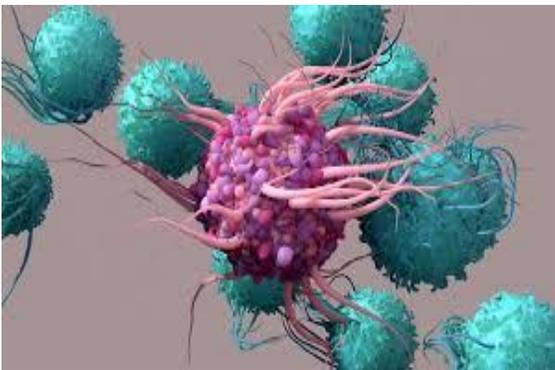
## A systematic review and meta-analysis of the efficacy and safety of pharmacological treatments for obesity in adults

**Barbara McGowan et al., 2025**

<https://doi.org/10.1038/s41591-025-03978-z>

This systematic review and network meta-analysis of 56 randomized controlled trials involving 60,307 adults evaluated obesity management medications (OMMs) versus placebo, focusing on total body weight loss (TBWL%) and obesity-related complications. All OMMs significantly

reduced weight, with semaglutide and tirzepatide achieving over 10% TBWL. Both drugs improved glycemic control and diabetes remission; semaglutide also reduced cardiovascular events and osteoarthritis pain, while tirzepatide aided sleep apnea and steatohepatitis remission, highlighting the importance of individualized OMM selection.



## Decoding immunometabolism with next-generation tools: lessons from dendritic cells and T cells

**Yi-Hao Wang, Limei Wang, and Ping-Chih Ho, 2025**

<https://doi.org/10.1038/s44318-025-00569-z>

Cellular metabolism critically regulates immune cell functions and fate, influencing immune responses in health and disease. Advanced technologies like single-cell metabolomics and spatial tissue profiling have deepened understanding of metabolic reprogramming in disease

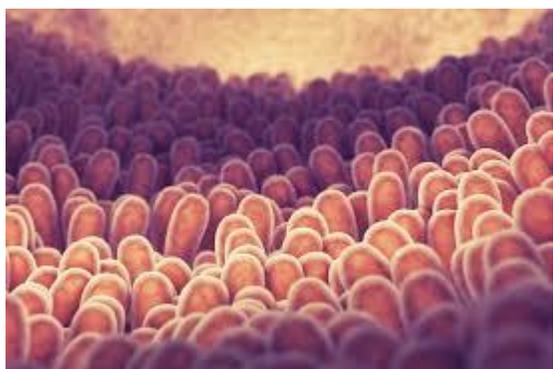
microenvironments, revealing its role in immune activation and dysfunction. Integrating these insights promises precision therapies, though further method development is needed to fully decode metabolism-immune interactions.

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## Commensal gut bacteria employ de-chelatase HmuS to harvest iron from heme

**Arnab Kumar Nath et al., 2025**

<https://doi.org/10.1038/s44318-025-00563-5>

Iron is vital for most organisms, which have evolved diverse strategies to acquire and utilize it, including from heme. The hmu operon, common in Bacteroidota and human gut microbiomes, encodes proteins for heme acquisition. This study reveals that HmuS, a membrane-bound NADH-dependent de-chelatase, anaerobically removes iron from heme to produce protoporphyrin IX and Fe(II), enabling Bacteroidetes thetaiotaomicron to use heme as its sole iron source. HmuS's 2.6 Å cryo-EM structure shows conserved heme and cation binding sites, suggesting a mechanism analogous to chelataes in heme biosynthesis but operating in reverse, highlighting a widespread anaerobic bacterial iron extraction strategy.

## RECOMMENDED EVENTS & JOB CORNER



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