MIT Technology Review
10 Breakthrough Technologies 2025

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What will really matter in the long run? That's the question we tackle each year as we compile this annual list.
technologyreview.com

INFRASTRUCTURE

2024's Biggest Breakthroughs in Computer Science
The year's biggest breakthroughs in computer science included a new understanding of what's going on in large language models (LLMs) and a breakthrough in computing Hamiltonians – models that represent complex quantum systems. Read more at Quanta Magazine:...
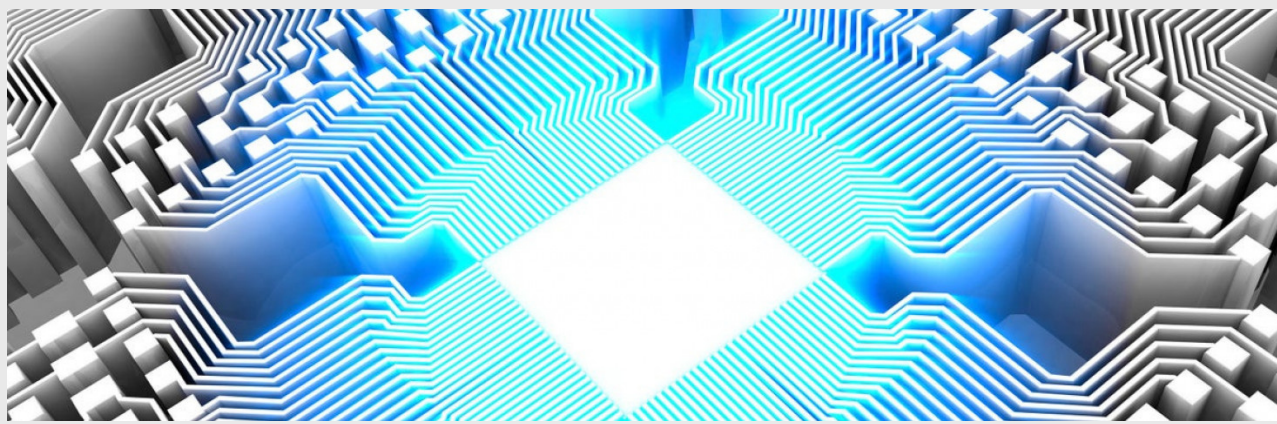youtube.com

This Cryptographer Helps Quantum-Proof the Internet
Cryptographer Joppe Bos, coauthor of the CRYSTALS-Kyber algorithm, is leading digital security with quantum-safe encryption. His work, adopted by NIST, is already in use in Google Chrome and will be embedded in IoT devices, cars, and more. In the face of advancing quantum computing, his algorithms...
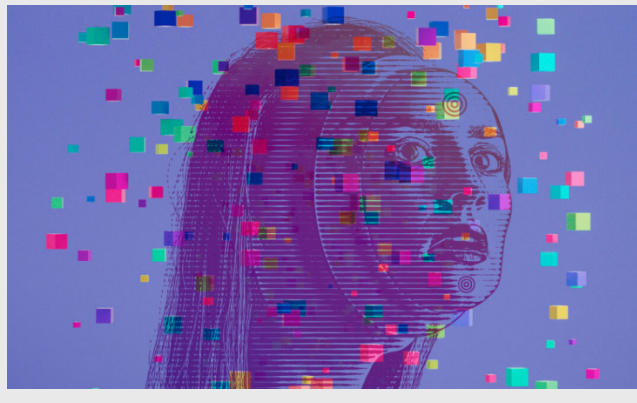spectrum.ieee.org

Google's 'Willow' Chip Makes a Major Breakthrough in Quantum Computing
Google's new chip, Willow, has achieved the exponential suppression of errors. The advance is substantial, but Willow remains far from delivering on any practical applications
scientificamerica...

ARTIFICIAL INTELLIGENCE

2024: The year AI drove everyone crazy
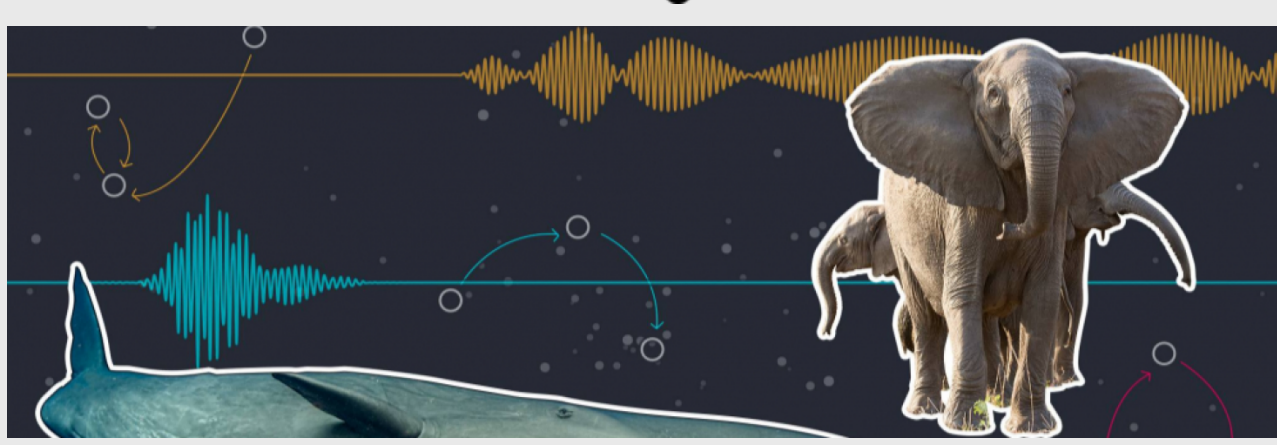What do eating rocks, rat genitals, and Willy Wonka have in common? AI, of course.
arstechnica.com

How AI is unlocking ancient texts - and could rewrite history
From deciphering burnt Roman scrolls to reading crumbling cuneiform tablets, neural networks could give researchers more data than they've had in centuries.
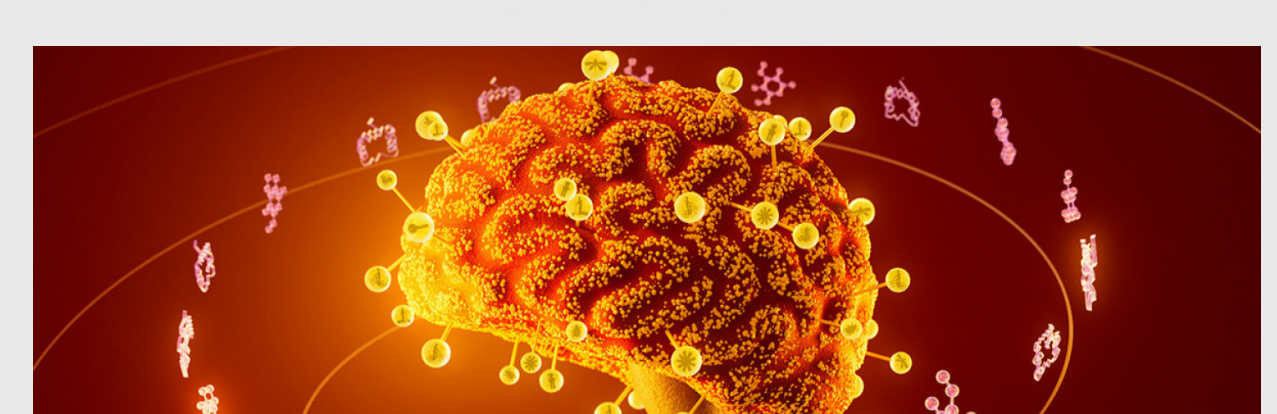nature.com

How AI is decoding the animal kingdom
Scientists are eavesdropping on animal conversations. Will generative AI enable us to talk back?
ig.ft.com

LIFE SCIENCES

The Year in Biology
Biologists used artificial intelligence to make discoveries about molecules and the brain, and overturned long-held assumptions about the immune system and RNA.
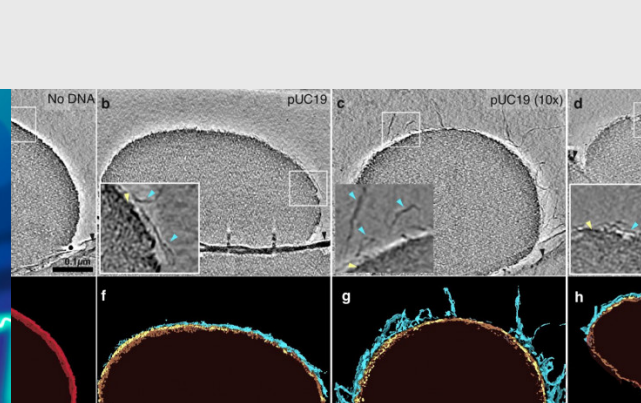quantamagazine.org

World's First "Molecular Movie": Witness DNA Becoming Life's Blueprint in Real-Time
Using an innovative approach, EMBL scientists uncovered key interactions between molecular machines, potentially opening new avenues for drug development.
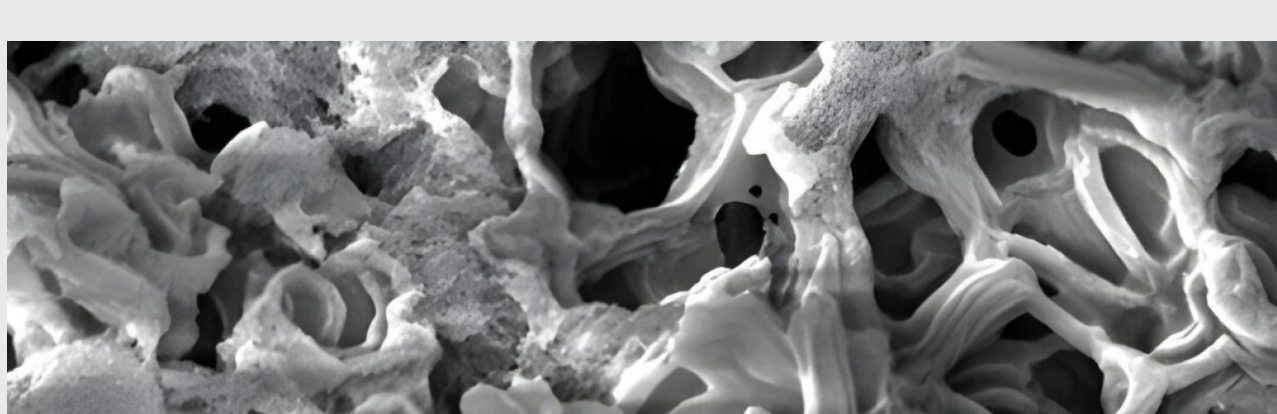scitechdaily.com

Scientists discover a 'Goldilocks' zone for DNA organization, opening new doors for drug development
In a discovery that could redefine how we understand cellular resilience and adaptability, scientists at Scripps Research have unlocked the secret interactions between a primordial inorganic polymer of phosphate known as polyphosphate (polyP), and two basic building blocks of life: DNA and the...
phys.org

ADVANCED MATERIALS

A football field in a teaspoon: New material has insane surface area
Using principles from rocket science, researchers have created carbon with a record-breaking surface area. The material can soak up about twice the amount of CO_2 as current activated carbon materials and has impressive energy-storage capabilities.
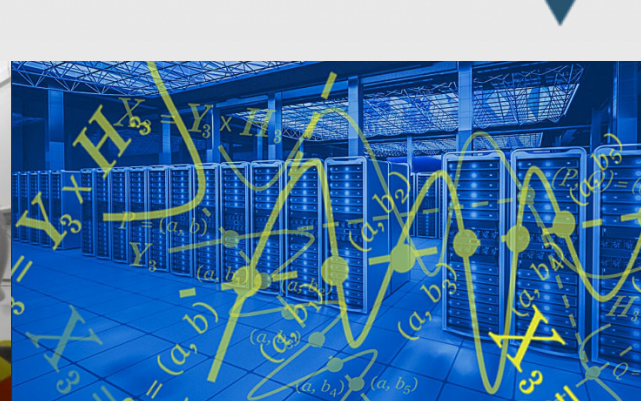newatlas.com

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ENERGY

'World's first' grid-scale nuclear fusion power plant announced in the US in another step for the futuristic energy
If all goes to plan, Virginia will be the site of the world's first grid-scale nuclear fusion power plant, able to harness this futuristic clean power and generate electricity from it by the early 2030s
edition.cnn.com

Algebraic geometry offers fresh solution to data center energy inefficiency
The manic pace of sharing, storing, securing, and serving data has a manic price-power consumption. To counter this, Virginia Tech mathematicians are leveraging algebraic geometry to target the inefficiencies of data centers.
phys.org

IN THE LAB

Mathematicians Uncover a New Way to Count Prime Numbers
To make progress on one of number theory's most elementary questions, two mathematicians turned to an unlikely source.
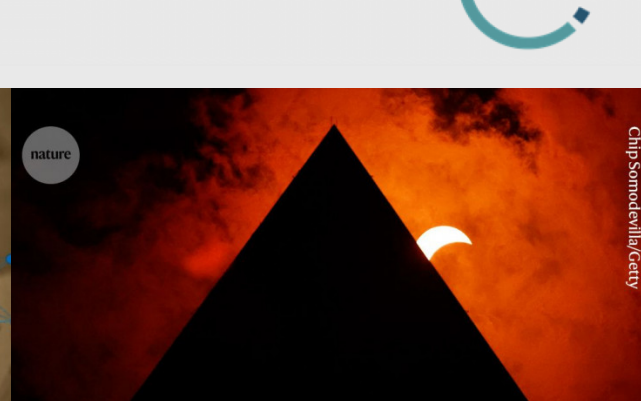quantamagazine.org

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AFTER HOURS

Ten cool science stories we almost missed
Bronze Age combat, moral philosophy and Reddit's AITA, Mondrian's fractal tree, and seven other fascinating papers.
arstechnica.com

The best science images of 2024
A breathtaking total eclipse, courageous penguins, volcanic smoke rings and more.
nature.com

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