

AI News Digest

08/17/2026 - 08/23/2026

WEEKLY DIGEST: BIOLOGICAL & BIOMEDICAL SCIENCES

Advances in Bio-Hybrid and Neuromorphic Technologies

Recent breakthroughs in bio-hybrid systems, neuromorphic computing, and AI-powered robotics are transforming our understanding of biological and biomedical sciences. Researchers are developing innovative technologies that combine synthetic materials with living organisms, enabling enhanced mobility, functionality, and low-power memory devices. These advancements have significant implications for the future of healthcare, biotechnology, and artificial intelligence. From AI-powered terrain recognition in cyborg cockroaches to nanorobots collecting bacteria, the intersection of biology and technology is yielding remarkable results.

KEY FINDINGS

- ✓ Researchers at Penn State have developed a bio-hybrid system that combines synthetic DNA with crystalline perovskite to create a low-power memory device.
- ✓ Microsoft Research has released Skala 1.1, an updated deep-learning density functional theory (DFT) approach that demonstrates improved accuracy across key molecular simulation challenges.
- ✓ The human brain operates at approximately 20 watts, while large language models require a megawatt of power to function, highlighting the significant difference in energy efficiency between biological and artificial systems.

IMPLICATIONS

- The development of bio-hybrid systems and neuromorphic computing could lead to significant breakthroughs in healthcare and biotechnology.
- The integration of AI and biology could enable the creation of more efficient and effective treatments for various diseases.
- The advancements in AI-powered robotics could have far-reaching implications for fields such as environmental monitoring and search and rescue operations.

Key Metrics: 100x less power used by the bio-hybrid memory device; 20 watts of power required by the human brain; 1 megawatt of power required by large language models; 1.1 version of Skala, an updated deep-learning DFT approach

1. Scientists turn DNA into a memory device that uses 100x less power

Category: Research

Departments: Electrical & Computer Engineering, Computer Science, Metallurgical, Materials & Biomedical Engineering, Biological Sciences

Topics: AI Hardware, Neuromorphic Computing, DNA-based Memristor

Impact Score: 25.0

Rubric Scores

Research Relevance: 5

Educational Value: 4

Innovation / Novelty: 5

Practical Impact: 4

Interdisciplinary Potential: 5

Ethical / Policy Implications: 2

Researchers at Penn State have developed a bio-hybrid system that combines synthetic DNA with crystalline perovskite to create a low-power memory device. The device, a memristor, can store and process information in the same place, mimicking the function of neurons in the brain. The system consumes 100 times less power and has a higher storage capacity than traditional storage devices, making it potentially suitable for neuromorphic computing and artificial intelligence applications. The approach overcomes the challenge of integrating biological DNA with electronic materials.

<https://www.sciencedaily.com/releases/2026/08/260816044853.htm>

2. Broadening access to Skala creates a faster path to predictive DFT

Category: Research

Departments: Computer Science, Chemistry & Biochemistry, Mathematical Sciences, Physical Therapy & Movement Sciences, Biological Sciences

Topics: Science & Research, Density Functional Theory, Deep Learning for DFT, Molecular Simulation Benchmarking

Impact Score: 24.0

Rubric Scores

Research Relevance: 5

Educational Value: 4

Innovation / Novelty: 4

Practical Impact: 5

Interdisciplinary Potential: 5

Ethical / Policy Implications: 1

Microsoft Research has released Skala 1.1, an updated deep-learning density functional theory (DFT) approach that demonstrates improved accuracy across key molecular simulation challenges, including thermochemistry, reaction kinetics, and molecular structure prediction. Trained on 2.5 times more data than its predecessor, Skala 1.1 outperforms previous functionals, ranking first in 32 of 55 categories of the GMTKN55 benchmark. Skala 1.1 is now available in CP2K and is being integrated into several other electronic-structure software packages, including Psi4, FHI-aims, ORCA, and VASP. A new living benchmark has also been introduced to track the computational performance of successive Skala releases.

<https://www.microsoft.com/en-us/research/blog/broadening-access-to-skala-creates-a-faster-path-to-predictive-dft/>

3. AI-powered terrain recognition helps cyborg cockroaches navigate faster

Category: Research

Departments: Electrical & Computer Engineering, Biological Sciences, Computer Science, Industrial, Manufacturing & Systems Engineering, Aerospace & Mechanical Engineering

Topics: Robotics, Biohybrid Systems, Edge AI, Sensor Integration, Locomotion Enhancement

Impact Score: 22.0

Rubric Scores

Research Relevance: 4

Educational Value: 3

Innovation / Novelty: 4

Practical Impact: 4

Interdisciplinary Potential: 5

Ethical / Policy Implications: 2

Researchers have developed cyborg insects that integrate miniature electronic devices with living organisms, enabling enhanced mobility and functionality. This technology combines the agility of living insects with the capabilities of electronic devices, potentially suitable for applications such as search-and-rescue operations and infrastructure inspection. The hybrid system may also facilitate exploration of hard-to-reach environments, not easily accessible to traditional robots.

<https://techxplore.com/news/2026-08-ai-powered-terrain-recognition-cyborg.html>

4. Tiny robots powered by light can hunt down and collect bacteria

Category: Research

Departments: Biological Sciences, Computer Science, Electrical & Computer Engineering, Industrial, Manufacturing & Systems Engineering, Metallurgical, Materials & Biomedical Engineering

Topics: Robotics, Photon Recoil Propulsion, Microbial Robotics, Biomedical Nanorobots, Optical Control Systems

Impact Score: 18.0

Rubric Scores

Research Relevance: 3

Educational Value: 3

Innovation / Novelty: 4

Practical Impact: 3

Interdisciplinary Potential: 4

Ethical / Policy Implications: 1

Researchers at Julius-Maximilians-Universität Würzburg have developed nanorobots that can operate in the microbial world, collecting and transporting bacteria using photon recoil propulsion. The robots, measuring around 1 micrometer in size, are powered and steered by light, allowing for precise control and maneuverability. The nanorobots have demonstrated the ability to selectively capture, carry, and release bacteria in laboratory settings, showcasing their potential for applications in microbiology and biomedical research. This development brings scientists closer to directly interacting with the microscopic world.

<https://www.sciencedaily.com/releases/2026/08/260816044850.htm>

5. Michael Polansky is training an AI model on skin that's still alive

Category: Business

Departments: Biological Sciences, Computer Science

Topics: Healthcare AI, Biological AI Systems, Tissue Engineering, AI in Cosmetics

Impact Score: 15.0

Rubric Scores

Research Relevance: 2

Educational Value: 1

Innovation / Novelty: 3

Practical Impact: 3

Interdisciplinary Potential: 4

Ethical / Policy Implications: 2

Michael Polansky, co-founder of AI and biology startup Outer Biosciences, leads a double life as the partner of Lady Gaga. Outer Biosciences has made progress in keeping living human tissue alive outside the body for over a month. Polansky's background includes working at Bridgewater Associates and Founders Fund, and he also serves as executive director of the Parker Institute for Cancer Immunotherapy. His company, Outer Biosciences, collaborates with Lady Gaga's cosmetics brand, Haus Labs, on certain scientific endeavors.

<https://techcrunch.com/2026/08/21/michael-polansky-is-training-an-ai-model-on-skin-thats-still-alive/>

6. The Human Brain Versus AI: Similar Results, Very Different Machines

Category: Research

Departments: Computer Science, Biological Sciences

Topics: Large Language Models, Efficient Processing, Brain-Computer Comparison, Energy-Efficient AI

Impact Score: 14.0

Rubric Scores

Research Relevance: 2

Educational Value: 4

Innovation / Novelty: 1

Practical Impact: 2

Interdisciplinary Potential: 3

Ethical / Policy Implications: 2

A recent article compares the computational power of the human brain to that of large language models (LLMs). The brain operates at approximately 20 watts, while LLMs require a megawatt of power to function. This significant difference in energy consumption highlights the disparate architectures and efficiencies of biological and artificial intelligence systems. The article highlights the contrast between the brain's and LLMs' processing capabilities and power requirements.

<https://www.eetimes.com/the-human-brain-versus-ai-similar-results-very-different-machines/>