

Weekly Update

1. Bioengineers on the brink of breaching blood-brain barrier

Sometimes strict protection can be destructive, in such a situation it is necessary to crack it to move forward for well-being. On the verge of doing so, researchers from the University of Penn are going to develop a very new method to break the blood-brain barrier system for treating neurological disorders with the help of lipid nanoparticles (LNPs) that help in delivering the essential mRNA.

Source: University of Pennsylvania

<https://penntoday.upenn.edu/news/bioengineers-brink-breaching-blood-brain-barrier>

2. Combining two types of molecular boron nitride could create a hybrid material used in faster, more powerful electronics

Compounding the parents of 2 different types of boron nitride i.e.(c-BN, cubic boron nitride and h-BN, hexagonal boron nitride), both of them have some similarities and some differences but when they join each other, then a new pith is formed, which can then be used in a more robust way to regulate and direct the behavior and emission of electrons.

Source: The Conversation

<https://theconversation.com/combining-two-types-of-molecular-boron-nitride-could-create-a-hybrid-material-used-in-faster-more-powerful-electronics-211470>

3. New Wearable Sensor Accurately Tracks Tiny Changes in the Breath Process

The new sensor, made of hexagonal boron nitride ink, provides valuable physiological information about a person by detecting diminutive changes in air flow as we breathe in and out.

Source: University of Manchester

<https://www.manchester.ac.uk/discover/news/new-wearable-sensor-accurately-tracks-tiny-changes-in-the-breath-process/>

4. 'Old smokers' and 'squalling newborns' among hidden stars spotted for first time

Get ready for a divine revelation! For the first time, astronomers have spotted 'Old Smokers' and 'Squalling Newborns', shedding light on mysterious corners of our universe. Embark on an interstellar journey to discover the captivating secrets of these hidden stars. Gear up for space travel!

Source: Royal Astronomical Society

<https://ras.ac.uk/news-and-press/news/old-smokers-and-squalling-newborns-among-hidden-stars-spotted-first-time>

5. Offshore wind farms are vulnerable to cyberattacks, new Concordia study shows

Offshore wind farms are an important integral part of the broader displacement toward renewable energy, but they also face cyber threats that could impact the stability of the power grid, according to a new study from Concordia and Hydro-Quebec researchers.

Source: **Concordia University**

<https://www.concordia.ca/news/stories/2024/01/24/offshore-wind-farms-are-vulnerable-to-cyberattacks-new-concordia-study-shows.html>

6. Writing by hand may increase brain connectivity more than typing on a keyboard

Data collected from 36 university students with the help of electroencephalogram (EEG) testing, where researchers found that there is more electrical activity in the brain when "writing by hand" than when typing on a keyboard. Although technologies progress, there will be a balancing act as to which way of writing provides greater benefit in which circumstances.

Source: **Frontiers**

<https://www.frontiersin.org/news/2024/01/26/writing-by-hand-increase-brain-connectivity-typing>

7. Microbes that gave rise to all plants and animals became multicellular 1.6 billion years ago, tiny fossils reveal

Can we really imagine how old cells can really be, however, a new study has discovered microscopic, algal fossils more than 1.6 billion years old that also support the notion of multicellularity. Typically, biologists refer to: eukaryotes, which evolved 3.9 billion years ago, whose DNA was packaged in a nucleus, and prokaryotes, such as bacteria, which evolved with free-floating DNA about 2 billion years ago.

Source: **Science.org**

<https://www.science.org/content/article/microbes-gave-rise-all-plants-and-animals-became-multicellular-1-6-billion-years-ago>

8. 'Sci-fi instrument' will hunt for giant gravitational waves in space

LISA, Laser Interferometer Space Antenna, interferometer, which means there's an L shape that lasers are sent into and then they bounce them off mirrors, and then they check what happens when those lasers interfere with each other. LISA will also be able to make more accurate independent measurements of the Hubble constant than any existing technique.

Source: **nature**

<https://www.nature.com/articles/d41586-024-00254-x>

9. Autonomous synthesis robot uses AI to speed up chemical discovery

Following a holistic and inclusive approach, RoboChem not only captures successful experiments but also records negative data as Noël says 'a failed experiment also provides relevant structure and behavior into the chemical nature of the substance.' This innovative instrument is specifically used to aid in molecular science.

Source: University of Amsterdam

<https://hims.uva.nl/content/news/2024/01/autonomous-synthesis-robot-uses-ai-to-speed-up-chemical-discovery.html?origin=QHAZwjzdTzivRzgW9Q2Rng&cb>

10. New Research Combats Burgeoning Threat of Deepfake Audio

It will now become easier to determine the authenticity of an audio clip by using various techniques such as embedding to distinguish the original from the cloned voice, which involves feeding the raw audio into a model, also known as a deep-learning model. This research may address growing concerns about the use of voice cloning and deep fakes for villainous intentions.

Source: Berkeley School of Information

<https://hims.uva.nl/content/news/2024/01/autonomous-synthesis-robot-uses-ai-to-speed-up-chemical-discovery.html?origin=QHAZwjzdTzivRzgW9Q2Rng&cb>