

Below are extracts from three insightful technology-focused articles published recently on the topics of global health technology, the growth of chip manufacturing giant Nvidia and the EU's latest AI regulation. The news originated from Morgan Stanley (May 22nd, 2024), the Irish Times (June 3rd 2024) and RTE (May 29th 2024), as referenced below.

In this week's news we highlight the latest development in global health technologies, the unprecedented growth of tech giant, Nvidia, and Europe's continuing crusade to regulate AI technologies.



New Technologies for Longer, Healthier Lives.

In recent weeks, Morgan Stanley (2024) reports on its research study into the 'longevity' theme, which identifies 10 key 'longshot' technologies likely to have an impact on how long people live and the quality of life in the decades to come. The focus of these technologies is more on preventative medicine, moving away from purely treating chronic illnesses and examining how human lifespan can be extended. Morgan Stanley (2024) estimates that some of these new drugs and therapies can extend our healthspan by 10% to 15%, :

Key Takeaways

- Technologies that facilitate and augment preventive treatments could delay the onset of chronic diseases and add decades to a person's lifespan.
- Ten "longshot" technologies could start to have a major impact on longevity in the next decade.
- While many of the benefits are years or decades in the future, a growing number of these technologies are approved and having impact today.

Technological innovations now in development hold the key not just to living longer, but living better.

Although modern medicine still knows little about the aging process, it's clear that delaying the onset of chronic diseases, as well as addressing acute illnesses such as cancer, may change the course of aging and add decades to human lifespans as well as "healthspans."

"Modern medicine has almost exclusively focused on treating disease rather than preventing it. This has a major drawback: Although people live longer, they tend to spend that additional time suffering from disease," says Ed Stanley, Head of Thematic Research for Morgan Stanley. Now a renewed focus on 'biological age' and extending life by delaying aging has given more relevance to therapies at different stages of development and commercial viability. "We appear close to having drugs and therapies that can extend our healthspan by 10% to 15%," he adds.

Morgan Stanley (2024)

This Morgan Stanley (2024) research study, identifies the significant innovations either in development or already approved,—and what investors looking to benefit from these advances need to consider in the broader market. Here are the 10 "longshot" technologies highlighted.

AI Drug Discovery: Developing a novel therapy typically takes more than \$1 billion and at least a decade to receive government approval, yet only about 10% of therapies entering clinical studies make it through that approval process. Artificial intelligence (AI) has the potential to improve the efficiency and success rates of early-stage drug development. AI drug discovery will require vastly more computing power, which in addition to biotech firms, could benefit data storage providers, designers of digital tools, and companies focused on AI and machine learning for diagnostic and clinical applications.

AI-Assisted Reproductive Technologies: As life expectancy has increased, so has the share of people delaying pregnancy. At the same time, most developed nations can't maintain their populations based on current birth rates, and this has serious long-term implications for economic growth. AI can improve the success rates of embryo selection in IVF treatments, with an accuracy of 78% compared with 13.8% to 66.3% currently. It also can enhance assessment of embryo quality and may help develop personalized strategies for embryo selection. These trends may benefit companies in IVF, surrogacy and adoption businesses.

Morgan Stanley (2024)

Bioprinting: Bioprinting organs for transplant could help overcome supply shortages, compatibility issues and post-transplant rejections by printing living cells that, when layered into structures, imitate living tissue. Clinics may be able to create skin and bone grafts, implants and even organs with 3-D printers. Companies that may benefit from these developments include makers of bioinks and bioprinters, tissue engineers and drug developers. Investors should watch for deals from bigger players targeting bioprinting innovators.

Brain-Computer Interfaces (BCIs): An estimated 800 million people worldwide—including 240 million children—live with some form of disability. For many of these individuals, BCIs could be an option. BCIs are complex mechanisms that capture the human brain's electromagnetic signals and translate them into commands for an AI interface. This allows for research in developing bionic limbs that offer a chance for improved mobility, as well as applications that may help relieve paralysis. A handful of small companies, not-for-profit organizations and universities are developing invasive and non-invasive versions of BCIs, however funding in the space is relatively sparse and significant technological and regulatory hurdles remain.

Cell Reprogramming: Regenerative medicine and specialized cell therapies using adaptable stem cells are among the front-runners in halting or reversing the aging process. While CRISPR, a technology used to modify DNA in living organisms, is arguably still too nascent and expensive for the mass market, it may gain traction as governments weigh the societal costs of aging against the expense of these therapies. Companies in CRISPR and synthetic biology engineering stand to benefit the most from this technology.

Obesity Drugs: More than 650 million people worldwide suffer from obesity, which is linked to about 200 health complications and affects sectors like orthopedic surgery and dialysis care. GLP-1 medicines, initially used to treat type 2 diabetes by controlling the amount of sugar released in the bloodstream after eating to reduce appetite, are now showing they can address obesity and potentially its associated diseases as well. The global market for obesity drugs is now expected to reach \$105 billion in 2030, up from an earlier forecast of \$77 billion—and as high as \$144 billion as their use expands beyond obesity to treat related diseases.

Morgan Stanley (2024)

DNA Synthesis: Using DNA synthesis, it's already possible to create personalized medicines to treat disease, and now advances in AI could help make this technology more accessible. Beyond medicine, DNA synthesis could find agricultural applications to improve crop yields. The growth of synthetic biology will benefit cell programming and bioengineering firms, although the current opportunities are nascent and highly regulated.

Nanobots: Traditional robotics are highly effective in controlled environments like manufacturing but face challenges in dynamic real-world settings chiefly because of size and rigid design and scope of function. But significant advancements in miniaturization could define the next phase of robots. These next gen robots are designed to achieve robustness and agility in unpredictable environments and have the potential to revolutionize everything from surgery to agriculture. Investment opportunities may include makers of chips and component parts as well as nanotech pioneers.

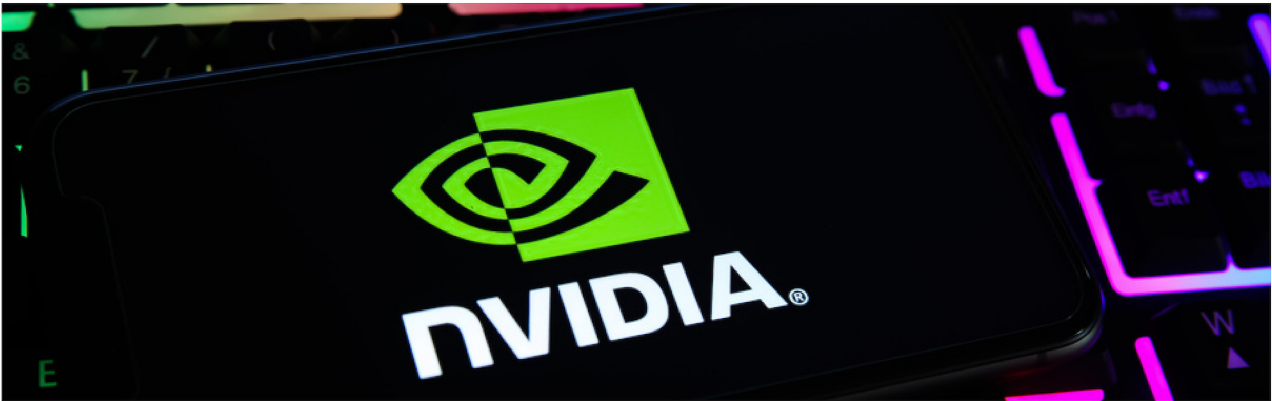
Psychedelics: Depression affects about 5% of adults worldwide, according to the World Health Organization. Now, emerging therapies that encourage neuroplasticity through psychedelics are gaining popularity to treat such mental health conditions. Psilocybin therapy combining drug sessions and psychological support and integration, have shown up to 50% improvements in treating depression versus traditional methods. Companies with exposure to the depression-treatment space could benefit as more data supports the therapy and regulatory hurdles ease.

"Smart Chemo": Cancer is the second-leading cause of death globally. Replacing traditional chemotherapy with targeted antibody drug conjugate (ADC) drugs, which home in on cancer like "biological missiles," promises a long-overdue upgrade to how cancer is treated and could create a \$140 billion long-term market, up from \$5 billion in 2022. Drug companies specializing in cancer treatments are poised to benefit from the change.

Morgan Stanley (2024)

Nvidia rewrites the laws of growth.

Tech company gained almost half a trillion dollars in market capitalisation in just three days



Meanwhile in its article this week , Irish Times(2024) highlights the unprecedented growth in recent years of semiconductor manufacturer, Nvidia , and how it is on the verge of overtaking Apple as the world's most valuable company :

The word “unprecedented” is an overused one, but it’s appropriate in the case of tech company Nvidia, which is on the verge of overtaking Apple as the world’s second-most valuable company. Now worth \$2.8 trillion (€2.6 trillion) to Apple’s \$2.9 trillion, Nvidia’s latest stunning earnings numbers resulted in it gaining some \$500 billion in market capitalisation in just three days.

That dwarfs January’s surge, when the company recorded a monthly gain of \$296 billion, breaking the record it set (\$248 billion) just eight months earlier.

Irish Times(2024)

Irish Times(2024) reminds us that normally a company’s growth rate tapers off as it gets bigger, but Nvidia is proving to be the exception in that regard :

Growth rates typically taper off as companies get bigger, but not here. Nvidia shares have enjoyed an 18-fold increase since 2020, when the company was valued at \$145 billion. They tripled in 2023 and have already more than doubled in 2024 – unprecedented numbers for a company of this size.

One analyst reckons another tripling is possible, saying Nvidia will be worth \$10 trillion by 2030. “It just seems wrong,” says Josh Brown of Ritholtz Wealth Management. However, Brown’s colleague, Michael Batnick, notes the surging share price merely reflects the surge in earnings, with Nvidia’s free cashflow rising seven-fold over the past year.

Irish Times(2024)



EU creates 'AI Office' to regulate tech under tough new law

RTE (2024) reports on the launch by the European Commission of an 'AI Office' of tech experts, lawyers and economists to further regulate the use and application of AI in the bloc. The aim of this 'AI Office' is to enable the future development, deployment and use of AI in a way that fosters societal and economic benefits and innovation, while mitigating risks:

The European Union has announced the creation of an "AI Office" of tech experts, lawyers and economists to regulate artificial intelligence under a sweeping new law. The EU this year approved the world's first comprehensive rules to govern AI, especially powerful systems like OpenAI's ChatGPT after long, intense negotiations. First proposed in 2021, the bloc raced to get the law in the books after ChatGPT burst onto the scene in 2022, leaving users stunned by its ability to churn out coherent text including poems within seconds.

"The AI Office aims at enabling the future development, deployment and use of AI in a way that fosters societal and economic benefits and innovation, while mitigating risks," the European Commission said. The 140-member AI Office will be established within the commission, which is the EU's executive arm and also acts as the bloc's powerful tech regulator.

"The Office will foster a European AI ecosystem that is innovative, competitive and respectful of EU rules and values," the EU's top tech enforcer, Thierry Breton, said.

RTE (2024)

According to RTE (2024) this new 'AI Office' will complement its recently introduced legislation, the 'AI Act ', which has tougher rules for general-purpose AI systems such as ChatGPT and takes a risk-based approach to the technology. The article also highlights a criticism of the commission for its potential lack of investment to achieve its AI ambitions :

The EU's law known as the "AI Act" has tougher rules for general-purpose AI systems such as ChatGPT and takes a risk-based approach to the technology. The higher the risk to Europeans' rights or health, for example, the greater the systems' obligations to protect individuals from harms.

"Together with developers and a scientific community, the office will evaluate and test general purpose AI to ensure that AI serves us as humans and upholds our European values," commission executive vice president Margrethe Vestager said.

Companies will have to comply with the EU's law by 2026, but rules covering AI models like ChatGPT will apply 12 months after the law becomes official. The EU's announcement came on the same day that EU auditors criticised the commission for failing to sufficiently invest in AI to achieve the bloc's ambitions.

"Going forward, stronger governance and more - and better targeted - public and private investment in the EU will be paramount if the EU is to achieve its AI ambitions," the bloc's spending watchdog said.

But the commission defended the bloc's record and said it was investing more than €1 billion annually in AI research projects under different schemes.

RTE (2024)

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