



# Transformative Inventions in Applied Sciences: A Year of Ground-breaking Advancements

John Bridge\*

Department of Pathogen Biology, Queen's University, UK

## DESCRIPTION

In the ever-evolving landscape of applied sciences, the past year has witnessed a myriad of ground-breaking inventions that are reshaping the way we perceive and interact with the world. From advancements in biotechnology to cutting-edge materials engineering, these innovations are not just scientific achievements but harbingers of transformative change. In this article, we celebrate the ingenuity that has defined the past year and explore the impact of these inventions on the field of applied sciences. One of the most revolutionary inventions in biotechnology over the past year has been the continued refinement of CRISPR-Cas9 gene editing technology. This ground-breaking tool allows scientists to precisely edit DNA, opening up unprecedented possibilities for treating genetic disorders, creating genetically modified organisms, and advancing our understanding of the human genome. The potential applications of CRISPR-Cas9 extend across various fields, from medicine to agriculture, marking a significant leap forward in the power of precision genetic manipulation. In the realm of information technology, the past year has seen remarkable strides in quantum computing. Quantum computers leverage the principles of quantum mechanics to perform computations at speeds unimaginable with classical computers. Notable inventions include advancements in qubit stability, error correction, and the development of quantum algorithms. These breakthroughs are poised to revolutionize fields such as cryptography, optimization problems, and drug discovery, ushering in a new era of computing capabilities. Materials science has witnessed a wave of innovation with the development of metamaterials that possess extraordinary properties not found in nature. Metamaterials have been engineered to manipulate light and sound waves, leading to the creation of devices like invisibility cloaks and super-efficient sound absorbers. These materials hold promise for applications ranging from advanced optics to acoustic engineering, with the potential to

transform industries and redefine the limits of what is possible. In the field of neuroscience and biomedical engineering, the past year has seen remarkable progress in neural interface technology. Inventions like brain-machine interfaces and neuro-prosthetics are enabling direct communication between the human brain and external devices. This has profound implications for individuals with paralysis, offering them the possibility of controlling prosthetic limbs or even interacting with computers using their thoughts. These inventions bridge the gap between technology and the human nervous system, opening up new frontiers in medical science. Addressing the urgent need for sustainable solutions, applied sciences have seen a surge in inventions focused on carbon capture technologies. From novel materials that efficiently capture carbon dioxide to innovative methods for its utilization or storage, these inventions aim to mitigate the impact of climate change. As industries and governments prioritize environmental sustainability, these advancements play a crucial role in developing practical solutions for a carbon-neutral future. The past year in applied sciences has been characterized by a remarkable tapestry of inventions that push the boundaries of what was once considered possible. From unlocking the secrets of the genetic code to harnessing the power of quantum mechanics, these innovations are not merely scientific achievements but beacons of hope for addressing some of humanity's most pressing challenges. As we reflect on the transformative inventions of the past year, we are reminded that the pursuit of knowledge and innovation is an ever-evolving journey, with each discovery paving the way for the next chapter in the story of applied sciences.

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**Corresponding author** John Bridge, Department of Pathogen Biology, Queen's University, UK, E-mail: j\_45@outlook.com

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