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Nanotechnology in Medicine

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Commentary

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DESCRIPTION

Nano medicine refers to the world of science which mixes nanotechnology with drugs or diagnostic molecules to boost the power to focus on specific cells or tissues. These materials are safe to introduce into the body and are produced on a nano-scale level. Applications for nanotechnology in medicine include drug delivery imaging, diagnosis which can help medical professionals to diagnose and treat various diseases.

The following are the scientific trends which has impact on the nanotechnology industry

Target specification: Improving the power of nanotechnological methods to focus on the precise cells or tissues is of great interest to companies in producing nanomedicines. This specific research involves combining nanoparticles and medicines or liposomes to increase specific localisation. Since different cell types own their specific properties, nanotechnology are often wont to "recognise" cells of interest or target cells. This enables drugs and therapeutics to act on diseased tissue while avoiding healthy cells.

Controlled drug release: The ability to manage the discharge of a drug molecule from its associated nanotechnology is grabbing huge interest from industry. This "triggered" release, in theory, might be achieved from inside the body or from outside the body.

Understanding different patient populations: Analysing how nanomedicines behave when encountering different physiological characteristics of patients and their disease states plays an important role to know why drugs lack ubiquitous efficacy.

BENEFITS AND APPLICATIONS

Applications of nanotechnology are delivered in both expected and unexpected ways on nanotechnology's promise to profit society.

Nanotechnology is considerably improving many technologies and industry sectors.

The following is a list of some rapidly growing benefits and applications of nanotechnology.

- Everyday materials and processes

E.g., Light weighting of cars, trucks, airplanes, boats, and space craft could lead on to significant fuel savings. Nano-scale additives in polymer composite materials are getting utilized in baseball bats, tennis rackets, bicycles, motorcycle helmets, automobile parts, luggage, and machine housings, making them lightweight, stiff, durable, and resilient. Nanotube sheets are now being produced to be utilized in future generation air vehicles. For instance, the mixture of sunshine weight and conductivity makes them ideal for applications like electromagnetic shielding and thermal management.

- Electronics and IT applications

E.g., Ultra-high definition displays and televisions are now being sold that use quantum dots to provide more vibrant colors while being more energy efficient.

- Medical and healthcare applications

E.g., Better imaging and diagnostic tools enabled by nanotechnology are clearing the way for earlier diagnosis, more specific treatment options, and better therapeutic success rates.

- Energy applications

E.g., Nanotechnology is improving the efficiency of fuel production from raw petroleum materials through better catalysis. It's also enabling reduced fuel consumption in vehicles and power plants through higher-efficiency combustion and declined friction.

- Environmental remediation

E.g., Nanotechnology enabled sensors and solutions are now ready to detect and identify chemical or biological agents present within the air and soil with much higher sensitivity than ever before. Researchers are investigating particles like self-assembled monolayers on mesoporous supports (SAMMS™), dendrimers, and carbon nanotubes to work out the ways to apply their unique chemical and physical properties for various sorts of toxic waste area remediation. Another sensor has been developed by NASA as a smartphone extension that firefighters can use to observe air quality around fires.

- Future transportation benefits

E.g., Nanoscale sensors and devices may provide cost-effective continuous monitoring of the structural integrity and performance of bridges, tunnels, rails, parking structures, and pavements over time. Nanoscale sensors, communication devices, and other innovations obtained by nanoelectronics also can support an enhanced transportation infrastructure which may communicate with vehicle-based systems to assist drivers maintain lane position, avoid collisions, adjust travel routes to avoid congestion, and improve drivers' interfaces to onboard electronics.