BioSpectrum the business of Bio & Health Sciences

Exploiting the wonders of nano

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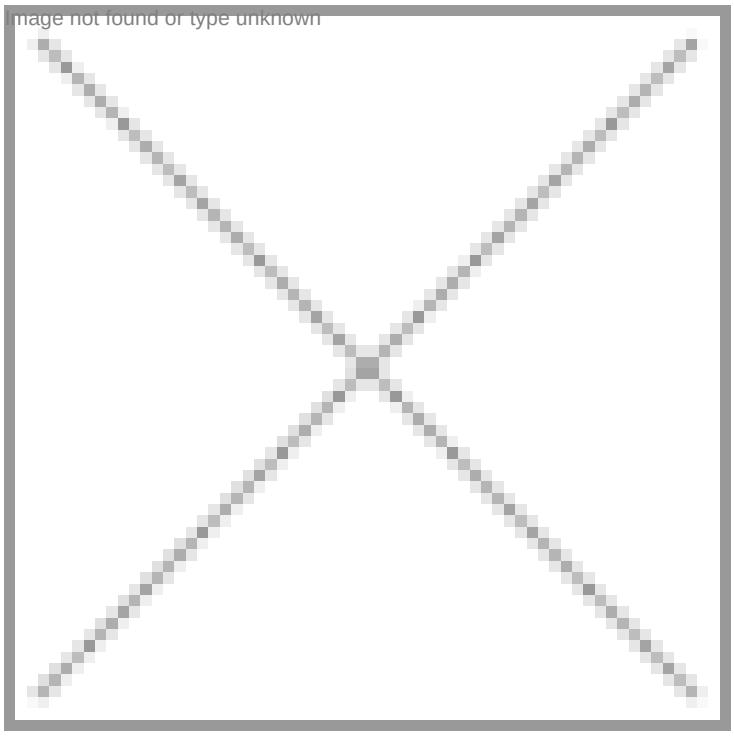


Nanobiotechnology

Nanobiotechnology is offering a vast range of opportunities to the life sciences industry and this is exptected to augment in the future. This field applies the tools and processes to build devices for studying biological systems

Genesis

On September 13, 2004, the National Cancer Institute launched the Alliance for Nanotechnology in Cancer. This program, initially scheduled to last for five years with $144 million in funding, was designed to develop applications of nanotechnology for cancer diagnosis and treatment.

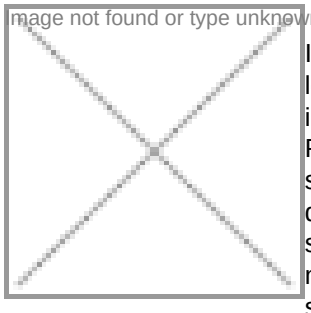
The Technology

With nanotechnology, a large set of materials and improved products rely on a change in physical properties when the feature sizes are shrunk. Applications of nanotechnology to medicine and physiology imply materials and devices designed to interact with the body at subcellular (i.e., molecular) scales with a high degree of specificity. This can be potentially translated into targeted cellular and tissue-specific clinical applications designed to achieve maximum therapeutic efficacy with minimum side effects.

The Impact

New molecular imaging techniques developed by nanobiotechnology are important to probe nano-scale physiological processes in human organs. Such systems help to diagnose diseases at the early stages and to understand the effects of therapies given to the patient. Nanobiotechnology tools help us to understand how cell functions are regulated at the molecular level. Genomics, proteomics, and metabolomics combined with the power of nanobiotechnology will help in understanding the disease, leading to effective and precise targeting.

Nanobiotechnology or bionanotechnology is a rapidly advancing area of scientific and technological opportunity that applies the tools and processes of microfabrication to build devices for studying biological systems. Researchers learn from biology to create new micro-nanoscale devices to better understand life processes at the nanoscale. The terms nanobiotechnology and bionanotechnology are often used interchangeably. Nanobiotechnology is essentially miniaturized biotechnology, whereas nanotechnology.



In any business, today's pioneers are tomorrow's leaders. This has led a lot of companies to venture into the nascent field of nanobiotechnology. Dabur Pharma is working on a novel nano-drug delivery system (presently in the advanced stages of development) for Paclitaxel. Because of the better safety and pharmacokinetic profile, the polymeric nanoparticle delivery system is seen as a potential super generic. Micromaterials India is a Bangalore-based company focused on developing innovative nano and micro technologies and materials catalysts for the life sciences industry. NanoBio Chemicals provides high quality nanoparticles using patented technology and also custom synthesizes complex peptides and biochemicals.

Moreover, NanoFactor Materials Technologies has a patent pending technology to synthesize carbon nanotubes that have extensive usage in the life sciences domain. Bangalore-based Velbionanotech, which came into existence in 2002, designs drugs for urology, cardiology and neuro diseases with the help of nanotechnology. Some of their product range includes herbal medicine, nano sensors, microDoctor, Nano Material, Nano Medicine and bionanochip.

Nanobio Chemicals, based in Mumbai, is engaged in the production of nanoscience education kits, biochemical synthesis and custom peptide, nanocomposites, nanochains, iron oxide nanoparticles and antimicrobial products for food storage, environmental, health and hygiene applications. Furthermore, other companies such as Nanobeach, which is a supplier of nano particles for life science companies, and Bangalore-based Micromaterials are also showing a lot of business potential in the field.

Saptarshi Chaudhuri in Bangalore