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The Life Science Industry - Determining our Future

Your heart is damaged – never mind, we'll just grow you another one! Liver in bad shape? No more waiting for a donor – we have replacement livers in plentiful supply! Could this ever happen? What does our future look like and how is life science changing this? In this article we take a look at the life science industry and how it is already blazing a trail in technological innovation for the future and the challenges these present.

The life science industry consists of companies in the sector of biotechnology, pharmaceuticals, biomedical technologies, food processing, medical devices and organisations. These companies devote their efforts to the scientific study of living organisms like plants, animals and human beings. They are our future – it is these organisations that will determine how we live, what we eat and our future health.

Life science is one of the fastest growing industries in the world today. On a daily basis and in laboratories around the world, science is using sophisticated technologies to manipulate microorganisms to understand how microbes cause disease and to develop better preventative and therapeutic measures against these diseases. Plant biologists are applying similar tools for crops and other plants to understand alternative uses for plants as vaccines and other products.

Indeed, it can be argued that our very existence and own well-being relies on continuing advances in the life sciences. For it is these organisations which research, identify and develop future treatments for cancer and other chronic diseases, develop environmental remediation technologies, improve biodefense capabilities, and create new materials and energy sources.

So how will life science evolve? By 2030, it is expected that there will be more diverse product types and new therapies – many based on genetic targeting. Medicine will shift towards tackling the disease by understanding the genetics behind it. Using stem cells and genetic engineering techniques, scientists are already learning to regrow damaged organs, tissues, muscles, and bones to regenerate damaged bodies. In reality, synthetic body parts that can be implanted into humans are already here with the first completely synthetic windpipe being inserted into a person whose windpipe had been damaged by cancer. In the future we will no longer need the dentist to drill fillings or provide false teeth because the genetic-engineers will have figured out how to stimulate the relevant genes so we can re-grow and replace a missing tooth.

And with new home monitoring systems along with less expensive, but more efficient medical equipment, both – predicted for the next two decades – researchers believe that by 2030, killer diseases such as cancer, Alzheimer's, heart disease, and other ailments will become easy-to-manage sicknesses.

But life science is not just about healthcare and the treatment of disease, it is also about the development of new chemical formulas for everyday items such as deodorants, shampoos and cosmetics. Stem cell science to reduce the ageing process is a key trend in the future of cosmetics with plant stem cells being tested in laboratories today to tackle cell regeneration.

But these innovations are not without risk. For the life science industry there are numerous challenges. These include an increase in more diverse product types; new ways for assessing, approving and monitoring medicines; the growing importance of emerging markets; a greater public scrutiny impacting the ability to manage risk and compliance; and,

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tougher environmental controls and regulations will oblige companies to strategically reassess their supply chain approach.

In fact very few organisations and industries are confronted with such a complex range of risks as those in the life science industry. Globalisation, tough legal and regulatory environments with regional variance, increasingly demanding consumers and intense competition present specific risk management challenges.

As new products are developed, the risk of liability lawsuits, product recalls and the loss of intellectual property can cause concern. In this area, a company's reputation can be damaged immediately if life-saving products cannot be supplied, or claims made start to break down.

Increasingly the biotech companies of today are, more often than not, running the pharmaceutical activities – clinical trials, specialised analysis, technological research and innovation and product development. It is expected that the current trend of outsourcing by today's pharmaceutical companies to biotechs and clinical or contract research organisations (CROs) will continue.

The life science industry continues to innovate in laboratories across the globe on a daily basis. Today's innovative research which will determine our future – how we will look, how healthy we are, the environment we live in. With the speed of technological advance, a supply of replacement organs could be nearer than we think.