

Transforming life, Transforming Business: The Life-Science Revolution

By Juan Enriquez and Ray A. Goldberg

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The life-science revolution may well be the next big thing after the advent of the Internet in the 1990s. Companies like Monsanto, DuPont, Geron and Advanced Cell Technology are betting their futures on the life-sciences. But to succeed, these companies must revamp their business models, financial and M&A strategies, invest heavily in R&D with uncertain payoffs, and convince a sceptical public.

After Gregor Mendel's study of the laws of genetics in the 1800s, came Watson and Crick's path-breaking discovery of the DNA structure. And now, we have genome mapping. Technological advances have rapidly accelerated the pace of progress.

Binary code has united seemingly different industries like publishing, television, telecommunication, radio and computing. Similarly, genetic code, i.e. a language comprising of A, T, G, and C (nitrogenous bases Adenine, Thymine, Guanine and Cytosine, which are an important part of DNA) will bring together every industry that deals with living things and organic compounds. These primarily include agribusiness, chemicals, and pharmaceuticals.

Since the genetic research industry deals with enormous amounts of data, computing has started to play a central role. Thus, medical research, which moved from in vivo (within a living organism) to in vitro (inside a glass test tube) is now turning to in silico methods using computer databases.

Seeds are bundles of genetic information, which can be modified to achieve many benefits – higher yields, resistance to pests, easier processing, higher nutritional content, and even better medicinal properties.

Animals are also being turned into drug - manufacturing units by genetic modification.

In health care, personalised treatment, focusing on prevention rather than intervention, looks like a real possibility.

The genetic engineering revolution has pervaded the energy sector as well. There are exciting opportunities like plants that produce larger volumes of

alcohol, bacteria that turn sugar to polyester, and radioactivity-resistant bacteria that mine low-grade uranium.

But, with such a plethora of opportunities come various challenges. Monsanto's decision to shift completely to life sciences led to disaster when the agriculture industry suffered at the end of the 1990s. Dow Chemicals faced similar problems, before it decided to retrench and focus on traditional chemicals instead. For drug companies, moving into the life-science sector has meant moving to a business with lower profitability than their conventional business.

However, these are initial setbacks that any new big industry is bound to face. This is a period of trial and error, in which companies are experimenting with different operating and financial structures. So, they are bound to stumble here and there.

Companies must come up with M&A strategies that provide the necessary R&D scale, without creating a financial burden.

The most serious challenge of all is the public's reservations about genetic engineering. People are overlooking the benefits, and instead focusing on the negatives – accidents and abuse. Public fears are particularly grave in Europe.

Life-science companies must not take their technologies for granted, without bothering to address people's concerns. They must do more to spread awareness among the masses about the benefits of genetic engineering.

As genetic engineering makes a direct impact on people's lives, its attractions will become more apparent. With time, acceptance by the public will increase. But there is still a long way to go.