

The Pharmaceutical Industry is notoriously conservative with respect to new technology. This attitude is understandable, given the real constraints of the healthcare field. Every innovation carries with it a burden: New processes and perhaps new equipment must be developed, along with new test methods and validation packages. New types of clinical trials may be needed. Manufacturing plants may need to be constructed or reconfigured. Various review boards and regulatory authorities must also be convinced of the soundness of any new approach, and human health and safety must always come first. These factors combine to impede implementation of new technology, yet there are equally important drivers for innovation: society continues to demand higher-quality healthcare and innovative medical treatments. Our attitude has evolved from the amazement that greeted new “miracle drugs” in the last century to an expectation that science will provide a cure (or at least a treatment) for every ailment that plagues us. Medical science and the healthcare industry have achieved the successes that led to this expectation, but each new increment of progress seems to come with increasing effort and sharply increasing costs. Both medical innovations and containment of development costs depend on adoption of new technologies.

Technology inventions occur in university laboratories, and in the research labs of private companies large and small. Technology development (i.e. to the point of application to make a product) tends to occur mostly in industry. Out of the hundreds of new technology ideas over the last few decades, which ones have become, or are becoming mainstream practices in the industry? This talk will examine a number of examples of “newer” technologies that are increasingly mainstream in industrial practice. These examples will be divided into two broad categories: (1) Technologies that increase efficiency or productivity, or otherwise offer benefits to the manufacturing process, and (2) technologies that enable new medical treatments, thus benefiting patients directly (e.g. drug delivery), with an emphasis on the second category. The author will also offer a perspective on technologies that have received publicity, but have not yet been widely adopted, and what might be required for them to attain wide application.