

Enhancing pharmaceutical therapies

Innovation and a commitment to advancing research help BD remain at the leading edge of drug discovery, production and delivery.

BD's contributions to drug discovery can be traced to the very first commercial flow cytometer, which the Company brought to market in 1973. Today, major pharmaceutical companies as well as medical and academic research centers the world over use BD flow cytometry platforms—including cell sorters, analyzers, software and reagents—to identify cells and better understand their functions and the effects new drug candidates have on them.

The Company continually innovates to keep BD flow cytometers at the center of drug and vaccine research and development. Researchers use *BD Phosflow* technology to analyze cell signaling

pathways to understand how experimental drugs might impact these pathways and inhibit the spread of disease. *BD Cytometric Bead Arrays* allow researchers to analyze multiple markers at the same time, increasing efficiency and delivering more results from smaller samples. BD also helps pharmaceutical and biotechnology customers and partners develop new medicines tailored to specific patient sub-populations by collaborating on the development of biomarkers and companion diagnostic assays.

Drug production is undergoing a major change, as generations of chemically derived small molecule drugs are joined by newer, biologically derived large molecule therapies. In response, BD established a new product platform, Advanced Bio-processing, to enable the industry to produce higher volumes of biopharmaceuticals efficiently and safely. With its high-quality, consistent cell culture media supplements already used in 19 drugs and vaccines, BD is expanding its product scope and adding production capacity.

When the most demanding pharmaceutical and biotechnology companies look for better ways to deliver injectable drugs and vaccines, they turn to BD—the world's leading provider of prefillable drug delivery systems. To meet the growing demand for *BD Hypak SCF*—sterile, clean, ready-to-fill—Glass Prefillable Syringes, BD is making significant investments in high-volume manufacturing, while also enhancing quality and providing customized systems that respond to the specific requirements of each drug or vaccine. BD also continues to invest in advanced injectable drug delivery systems by developing novel prefillable “Micro-Delivery” devices and self-injection devices for chronic therapies.

BD Hypak SCF Glass Prefillable Syringes are the worldwide standard for glass prefillable drug delivery systems, combining high-quality design with accurate dosing and easy customization options.



“In the pharmaceutical industry, the need to improve the efficiency of drug discovery and development has led to biomarker analysis at all stages of the process—discovery, toxicology, clinical trials. Using flow cytometry, data on cellular functioning in response to new therapies can be evaluated in a high throughput, reproducible and specific manner. Ultimately, this could lead to safer and more effective therapies.”

— Virginia M. Litwin, Ph.D.
Laboratory Director
MDS Pharma Services



The journey of a new drug from the research laboratory through clinical trials to regulatory approval is long, costly and fraught with obstacles that could preclude the therapy from ever reaching patients. In the U.S., pharmaceutical companies can spend more than 10 years and \$800 million to develop a new therapy and obtain FDA approval. A real need exists to speed this process and reduce the cost of developing new therapies. Promising new therapies and vaccines are emerging from the industry's increasing shift to biopharmaceuticals—but production capacity is still limited. Additionally, companies manufacturing these biotechnology drugs are seeking advanced injection-based delivery systems to increase the efficacy of their therapies.

The *BD LSR II* Flow Cytometer is an extremely flexible, powerful benchtop analyzer. Its innovative optics and digital electronics yield detailed insights into how cells work that ultimately help researchers develop better and safer drugs.

