Flow cytometers rapidly count and identify bacteria, cells, and other biological particles. This volume shows how flow cytometry is integrated into modern biotechnology, dealing with issues of throughput, content, sensitivity, and informatics, with applications in genomics, proteomics and protein-protein interactions, drug discovery, vaccine development, plant and reproductive biology, pharmacology and toxicology, cell-cell interactions, and protein engineering.

The modern flow cytometer allows the analysis and sorting of cells or particles at rates up to 50,000 particles/sec. Flow cytometry already facilitates all phases of drug discovery in the pharmaceutical industry, and it has groundbreaking potential in the biotechnology revolution of the 21st century. Scientific research benefits from flow cytometry's sensitivity of fluorescence, new probe technologies, and multiparameter analysis. With the appropriate sample handling and informatics systems, flow cytometry is capable of time-dependent subsecond analysis of cell response kinetics and molecular binding interactions. It is also capable of analyzing samples that are submicroliter in volume, and are repetitively sampled at rates compatible with high throughput.

"Timely and well organized, flow cytometry technology as described here will have a powerful impact on how one approaches high-throughput technologies. This first scholarly treatment of the subject should be read by flow cytometry experts, academic researchers, students, as well as those who are developing new biotechnology."

—Mark J. Soloski, Department of Medicine,
The Johns Hopkins University School of Medicine

"Flow cytometry of the 1980s and 1990s is not the flow cytometry of the biotechnology revolution. Today flow cytometry is relevant to microfabricated technologies, molecular tags for proteomics, automation, and high-throughput analysis. . . . As we move from the cytometry of yesterday to the cytomics of today, it is clear that while many aspects of the fundamental technology have not changed much, its capability has been enhanced logarithmically by new biotechnologies, new fluorescence tags, and clever combinatorial arrangements of natural fluorescent proteins. There is no doubt that flow cytometry has a new lease on life and its impact is only just being realized."

—J. Paul Robinson, Director, Purdue University Cytometry Laboratories,
Purdue University, Bindley Biosciences Center

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