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# Flow Cytometry: First Principles



## Synopsis

Flow cytometry continually amazes scientists with its ever-expanding utility. Advances in flow cytometry have opened new directions in theoretical science, clinical diagnosis, and medical practice. The new edition of *Flow Cytometry: First Principles* provides a thorough update of this now classic text, reflecting innovations in the field while outlining the fundamental elements of instrumentation, sample preparation, and data analysis. *Flow Cytometry: First Principles, Second Edition* explains the basic principles of flow cytometry, surveying its primary scientific and clinical applications and highlighting state-of-the-art techniques at the frontiers of research. This edition contains extensive revisions of all chapters, including new discussions on fluorochrome and laser options for multicolor analysis, an additional section on apoptosis in the chapter on DNA, and new chapters on intracellular protein staining and cell sorting, including high-speed sorting and alternative sorting methods, as well as traditional technology. This essential resource: Assumes no prior knowledge of flow cytometry Progresses with an informal, engaging lecture style from simple to more complex concepts Offers a clear introduction to new vocabulary, principles of instrumentation, and strategies for data analysis Emphasizes the theory relevant to all flow cytometry, with examples from a variety of clinical and scientific fields *Flow Cytometry: First Principles, Second Edition* provides scientists, clinicians, technologists, and students with the knowledge necessary for beginning the practice of flow cytometry and for understanding related literature.

## Book Information

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## Customer Reviews

"...reflects innovations in the field since the first edition was published..." (SciTech Book News, Vol. 26, No. 2, June 2002)

"I consider it to be the best presentation of principles of flow cytometry. The text is clearly written, the figures are well chosen." — Zbigniew Darzynkiewicz, Brander Cancer Research Institute, New York Medical College

disappointing, old and not updated , very very basic!

grt book

A core book designed mainly for the nonspecialist, "Flow Cytometry: First Principles" is addressing in ten chapters the essential issues in flow-cytometry, from flow machines to reagents, techniques and their applications in fundamental research and clinical settings. The first chapters convey us as far back as the beginning of the century, when the concept of flow-cytometry germinated. Light microscopy, cell counters and ink jet technology are standing at the grounds of flow-cytometry and their merging paved the way toward the modern, "black box", flow cytometers. However, "beyond the black box", the instrumentation and the technical aspects are comprehensively described in several chapters. A discussion on data acquisition and analysis is provided, along with the most used cell staining procedures, fluorochromes, lenses, mirrors and lasers. A widespread application in flow-cytometry is cell labelling, particularly leukocyte subpopulations identification with monoclonal antibodies binding cell surface specific markers. Although lymphocytes are the prototype, methods presented here -dot-plot, histogram, quadrant analysis and gating are applicable to many other cell types, including bacteria or algae. With the advent of some "state of the art" machines, DNA and chromosome analyses become feasible by flow-cytometry. It is foreseeable that molecular biology on flow-cytometer will not stop to cell cycle, ploidy and apoptosis investigation, but even chromosomal translocations or point mutations would be detectable with enough precision for diagnosis. Beside fundamental research applications, flow-cytometry is now an indispensable technique in the clinical laboratory, too. Oncology, immunology, hematology and pathology are fields where flow diagnosis has sometimes the last word to say. Cross-match analysis and HLA phenotyping can now rapidly be performed by flow-cytometry, with usefulness in organ and bone-marrow transplantation. The final chapter is intended to present the flow-cytometry of the future, as seen in 1992, with an emphasis on the functional assays which are gaining now an

increasing interest. However, a precedent, "out of the stream" chapter is preparing us on what this future could look alike. It approaches some of the border-line applications, in fields where flow-cytometry is becoming a current tool of research. These are microbiology -prokaryotic DNA and drug resistance determination-, ecology -aquatic environment, plankton, algae-, developmental biology or the functional studies -Ca<sup>2+</sup>influx. The book is highly recommended for flow-cytometry and sorting beginners, but it is an equally pleasant lecture for people working in many life sciences fields, eager to find out how flow-cytometry is shaping current biological research.

Easy to read and understand. Has jokes in the text... love textbooks with jokes!

The book includes almost you need to know before starting flow cytometry. If anyone wants to broadly get the knowledge but not go into the detail of flow cytometry, it's a good choice. You probably can go through it in 1-2 days.

"I consider it to be the best presentation of principles of flow cytometry. The text is clearly written, the figures are well chosen." -- Zbigniew Darzynkiewicz, Brander Cancer Research Institute, New York Medical College

Good for beginners/non-specialists who want to know general principles in flow cytometry. It's easy to read and understand.

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