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0521019702 - Flow Cytometry Data Analysis: Basic Concepts and Statistics
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Flow cytometry is now well established in research laboratories and is gaining increasing use in clinical medicine and pathology. The technique enables multiple simultaneous light-scatter and fluorescence measurements to be made at the individual cell level at very rapid rates and results in very large quantities of data being collected. Data, however, are just a series of numbers which must be converted to information which, in turn, must be shown to have meaning. This is the most important single aspect of flow cytometry, but it has received relatively little attention. One of the frequently voiced advantages of the technology is that it produces "good statistics" because large numbers of cells have been analysed. However, it is not very often that confidence limits are placed on results, and hence the reader has little or no feel for the inherent variability in the information produced.

This book covers very basic number-handling techniques, regression analysis, probability functions, statistical tests and methods of analysing dynamic processes. These are developed for the analysis not only of individual DNA histograms to obtain the proportion of cells in the cell-cycle phases, but also of time courses of DNA histograms to yield cell-cycle kinetic information, overlapping immunofluorescence distributions with confidence limits for the estimated proportions, and enzyme kinetic and membrane transport parameters. A brief introduction to multivariate analysis is also given. A distinction is made between data handling – for example, gating and counting the numbers of cells within that gate – and data analysis itself, which is the means by which information is extracted.

All those who use flow cytometry in their research will find this book an invaluable guide to interpreting the data produced by flow cytometers.

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