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Sommario/riassunto

Flow cytometry is a state-of-the-art technology that is widely used in biological research and clinical diagnostics. It is a high-throughput platform that allows the quantification, differentiation, and functional study of cells or cell like particles in suspension. Various cell components can be targeted with fluorescently labelled antibodies or fluorescent dyes to allow measurement and analysis of the physical, chemical, and biological properties of individual cells within homogenous or heterogeneous populations. Since its commercialization more than five decades ago, flow cytometry has advanced and become an very important analytical tool in translational research. With the advancement of instrument technology, an increasing number of fluorescent dyes, and an expanding range of monoclonal antibodies, the applications of flow cytometry in applied research continue to grow. The use of multiparametric flow cytometry in translational research provides the ability to rapidly identify different cell populations and to simultaneously measure multiple parameters of single cells for efficiently assessing immune status, decrease/increase of specific immune cell populations, cell activation status, etc. of different cells in preclinical and clinical studies. The primary goal of any research work is to take research results from the "bench to-bed and back". The use of flow cytometry in applied research advances the development of new diagnostic tests or drugs for cancer treatment, immune monitoring, etc. that help in patient care. Today, every biological scientist needs to have basic knowledge of flow cytometry in order to utilise this technology properly in their own research and to understand other’s research work. The present book has been designed to give the knowledge of flow cytometry and its applications to the researchers and teachers. It will allow the readers to utilize the technology in an appropriate way in their research work. This book has describing various applications of flow cytometry like cell health monitoring, immunophenotyping, cell sorting, stem cell characterization, micro-vesicle analysis etc.