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## ISAC 25<sup>th</sup> Anniversary

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### Preface

This issue of *Cytometry* is dedicated to the 25th anniversary of the International Society for Analytical Cytology (ISAC) as a society founded on the development and advancement of the science of automated cytology. Over the years ISAC has grown from 160 charter members in 1978 to approximately 1,800 members to date. This represents a greater than 10-fold increase in membership over the past 25 years. An excellent article provided by Phil Dean in this issue describes the chronological development of ISAC and outlines some of the historical events leading up to the formation of the society. The reader also is directed to a previous article by Dean that gives a more in-depth history on the events leading up to the formation of ISAC (*Cytometry* 1996;24:300-311). The slates of the previous officers in addition to the year, the location, and the number of attendees of meetings of the society are included in these articles. A wonderful perspective on the society and the evolution of the society's official journal, *Cytometry*, is also provided by Brian Mayall, the founding editor of *Cytometry*.

The formation of ISAC as a society was somewhat unique. In most instances, an organization is formed around a well-developed technology or some particular area of existing scientific specialization. However, in distinct contrast, the pioneers of the society were the inventors and builders of a unique technology that would drive the society into its existence. Since then, the members of the society have become the innovators of many new, rapidly developing applications in a wide range of the biological sciences. Each meeting of the society has focused on presentations of new developments that advanced the technology of automated cytometry, including flow cytometry (FCM) and image cytometries.

The field of automated cytometry advanced more rapidly after the beginning of ISAC than it had in the 25 years before the development of the society, when the major emphasis had been placed on counting and sizing cells and particles. Researchers from within ISAC demanded more sophisticated tools for rapid quantitation of multiple biochemical and physical properties of individual cells and/or cellular constituents. In this issue Howard Shapiro presents an overview of the recent evolution of FCM and image cytometric instrumentation. This article addresses the progressive transition in development of quantitative technology for cytological studies. Another article by Darzynkiewicz et al. focuses on the applications of FCM and image cytometry for cell cycle analysis. This use of the technology was a major breakthrough in analysis of cells

at various stages during cycle progression, and the accuracy and speed of analysis provided a great deal of notoriety and credibility to the new technology. The subsequent development of new antibodies labeled with various fluorochromes opened the field to numerous multicolor applications in which antigen-specific identification and quantitation could be coupled with position in the cell cycle.

Also in this issue, Scott Cram and Joe Gray address the applications of FCM for reliable discrimination and sorting of individual mammalian chromosomes. The technology evolved from the development of the DNA-specific fluorochromes including dyes with specificity for different DNA base pairs. Many of the fluorochromes used in these studies previously were developed for labeling cells for cell cycle analysis, in particular Hoechst and chromomycin A3, with specificity for AT and GC regions on DNA, respectively. In addition, a historical look at the development of anti-bromodeoxyuridine antibodies facilitating analysis of S-phase cells is provided by Leif et al.

It was only a matter of time until various cytological applications were adapted for analysis of plant cells, including rapid cell cycle and chromosome analysis. David Galbraith provides an article on the developments in this field. These studies relied on the development of methods to isolate cells and chromosomes from plant material. Clinical applications of FCM and image cytometry rapidly expanded the field and led to a vast number of applications during this period. A collection of articles introduced by Chuck Goolsby highlights these applications for analysis of heterogeneous cell populations in various disease states and points to exciting developments to come in this arena. This issue ends with a contribution from George Janossy highlighting several key advances that occurred with the synergy of monoclonal antibody development, cytometry, and clinical sciences. This article clearly points to the exciting future of cytometry playing a key, and critical, role in the era of genomics and proteomics (cytomics).

The rapid developments in biotechnology surely will change the methods for cytometric analysis from those during the first 25 years of ISAC, but certainly the members of ISAC will continue to play a major role in development of science. There is a continued need for more user-friendly, quantitative tools for rapidly measuring mul-

tiple biochemical and physical properties of individual cells or cellular constituents. As Janossy points out, this has never been more true than in the time of genomics and proteomics. Since its formation, ISAC has tended to be a technology-driven organization and the wide range of applications of the technology have led to a significant diversity of interests within the society. However, there exists a significant overlap in the cell biology studies that are required to address the general aspects of the function of cells within an organism. This recently developed concept has led to the study of "biological systems" and has fostered the integration of studies ranging from nanobiology to quantitative imaging of an entire organism. It is anticipated the ISAC will provide the platform for innovative development of the technologic advancements required to perform the studies within this arena.

A final tribute in the celebration of the 25th anniversary of ISAC goes to those members who gave willingly to preserve the society. The initiation and duration of a society rely on that significant level of sustaining power required to perpetuate and enlarge the role of the organization in the scientific community. These attributes must come from a strong desire of the membership to be involved as active participants in the society. In this regard, we most certainly owe a debt of gratitude to all the

officers and other members who so generously donated time and services to make ISAC the notable society that it is today. Without this dedication, there would be no such organization. From 1978 to 1985, when the society experienced a nearly fourfold increase in membership number, from 160 to about 625, all of the meetings were conducted by the officers and volunteer members. In addition, the entire business of ISAC, including soliciting and collecting dues, and mailing pertinent information without the aid of e-mail transmission, was handled on a volunteer basis. When the membership had substantially increased in number by 1985, the society had recognized the need for hiring a professional management company to assist in conducting business; however, the officers of the society and many other members continue to give of their time without financial compensation. The endurance of ISAC as a society for 25 more years will require similar commitments from the current and future membership, and only active membership participation can guarantee the future of ISAC. Each member is a valued participant of the society. So, play an active role that ISAC can provide to future members as much as it has for you.

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