
Preface

The discovery of the Philadelphia chromosome in 1960 ushered the field of cancer cytogenetics study into a new era. The development of fluorescence in situ hybridization (FISH) in 1980 helped to overcome many of the drawbacks in the assessment of genetic alterations in cancer cells by karyotyping. Subsequent methodological advances in molecular cytogenetics that were initiated in the early 1990s based on the principle of FISH have greatly enhanced the efficiency and accuracy of karyotype analysis by marrying conventional cytogenetics with molecular technologies. All of these molecular cytogenetic techniques add colors to the monotonous world of conventional chromosome banding. Currently, both karyotyping and FISH studies have emerged as indispensable tools for both basic and clinical research, which parallel their clinical diagnostic application in leukemia and cancers. The development, current utilization, detailed hands-on protocols, data interpretation, and technical pitfalls of these approaches used for cancer diagnosis and research will be included in this volume of book.

This volume *Cancer Cytogenetics: Methods and Protocols* of the Springer Methods in Molecular Biology series provides the readers with detailed protocols covering the main cancer cytogenetics techniques needed for clinical utilization and research purposes. Updated reviews on the recurrent chromosomal abnormalities in hematological malignancies provide an excellent, helpful benchmarking guide for cytogenetics data interpretation and specific malignant diseases correlation. All chapters were precisely written by professionally experienced cytogeneticists and/or pathologists working proactively in this specialized field. I have been very fortunate to have gathered a group of 52 experts from 15 countries or cities, including Australia, Canada, China, France, Germany, Hong Kong, Italy, Korea, the Netherlands, Poland, Russia, Singapore, Thailand, the United Kingdom, and the United States of America, in a short period of time to share their experiences empathetically and interactively. Although the circle of cancer cytogeneticists is relatively small, its task is notably significant, fostering worldwide contribution and collaboration. I would like to thank all of them for their generous contributions to this volume of book. In addition to the step-by-step description of every technique, much emphasis is placed on the pitfalls that accompany all testing procedures.

This book is intended for use by the novice in cytogenetics, providing helpful guiding protocols to them as well as deeper insights to those who are already engaged in the field, yet looking for some technical hints.

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