

Preface

In recent years, there has been rapid development in molecular techniques, allowing for precise and highly sensitive support of existing traditional methods used in hemato-oncology. The most frequent applications of molecular techniques in hematology include the identification of fusion genes resulting from chromosomal translocations, the detection of minimal residual disease, and the analysis of chimerism following allogeneic hematopoietic stem cell transplantation. They provide a methodological basis for the widening of horizons in hematology toward molecular problems, significantly modernizing basic research and allowing fundamental questions to be tackled relating to hematopoietic stem cell biology, the process of leukemogenesis, the response to therapy, etc. These methods are also quickly becoming an essential component of modern diagnostic and therapeutic programs, revolutionizing clinical hemato-oncology toward more targeted treatment. At the moment it is hard to imagine effective care for patients subjected to transplantation or to other forms of therapy consistent with modern criteria, without the systematic monitoring of molecular markers of disease, giving usually the most precise insight into the prognostic dilemma. This results in the widespread creation of molecular hematology laboratories performing analyses exclusively for the needs of relevant clinical units and creates the necessity for collaboration between hematology clinical units and existing molecular genetic labs. This entails understanding and collaboration between specialists from these two quite different fields.

This monograph is neither another handbook of clinical hemato-oncology nor an exclusive practical laboratory guide. Descriptions of selected hematological malignancies (Part I), diagnostic procedures (Part II), and various aspects of hematopoietic stem cell transplantation (Part III) focus on their molecular aspects and in most of the cases correspond to a set of relevant laboratory protocols as their counterparts (Part IV), giving, together with appropriate references to a clinical realm, a bigger picture of the problem. Such a layout of the text proved

appropriate in our previous publications on the topic, while the smooth blend of clinical and molecular problems perfectly matches the realities of medicine today.

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