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## Preface

Practicing radiation oncologists have to make several important decisions during treatment planning and realization, one patient at a time. Questions such as “is radiotherapy indicated, what is the optimal dose/fractionation regimen, what is the optimal technique and dose distribution, what are the risks and side effects” have to be addressed. This is often done in larger multidisciplinary teams, and ideally based on solid scientific evidence. Compared to earlier decades, we have now an incredibly large tool box, allowing for assessment of tumor biology and its surrogates, imaging biomarkers, host genetics, and dynamic tumor changes during treatment, to name a few. New research adding to these fields is being presented at each of the major international oncology meetings, including but not limited to prognostic scores and nomograms. It is critical to appraise the methodological strengths and weaknesses of such research and to put into context established decision tools.

The purpose of this book is to provide practicing radiation oncologists, as well as those in training, with a concise overview of the most important and up-to-date information pertaining to general and diagnosis-specific decision tools including staging systems. We strongly recommend starting with the introductory chapters, which provide necessary background information on statistical methods, principles of biomarker development, gene expression analyses, and other topics that are crucial for those who want to fully understand the applicability and limitations of prediction tools. Going towards increasingly individualized cancer therapy, we still need to rely on systematic evidence and sound treatment algorithms.

We are most grateful for the enthusiasm and courtesy all chapter authors showed during preparation of this truly international volume and for the fruitful discussion with many colleagues. We also appreciate the excellent support from the publisher. We hope that the reader will find this book to be a useful summary of new or refined decision tools and how they contribute to state-of-the-art radiation therapy. Only continued basic and clinical research will provide a better basis for tolerable and efficacious treatment regimens, exploiting the promises put forward by the emerging concepts of personalized medicine and adaptive radiation therapy.

Carsten Nieder  
Laurie E. Gaspar

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Nieder, C.; Gaspar, L.E. (Eds.)

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