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## Preface

The clinical and scientific field of neuro-oncology is one of the most exciting and rapidly changing areas of oncology. The heterogeneity of glial cancers is being addressed at the level of molecular genetics and gene expression profiling. This is paving the way for functionalizing the genome and individualizing therapy for patients. The cell biology of glial cancers is in hot pursuit as our understanding of glial ontogeny and function enters a new era and the lessons begin to percolate translational science.

Transgenic technologies coupled with evolving biological concepts facilitate the development of evermore sophisticated models of disease. These developments will enable better preclinical data generation and better therapies tailored to individual patients.

Yet the statistics remain grim. Central nervous system (CNS) malignancies account for 2 % of cancers but 7 % of cancer deaths. Emerging biomarkers are difficult to introduce into routine clinical practice for political, economic, and technical reasons. Early detection remains a challenge and patient recruitment is fraught with difficulties.

For those scientists, clinicians, and allied specialists, this is not new. What is new is an emerging sense of identity and enthusiasm across a broad spectrum of clinical and scientific endeavor. Against this background it is essential to facilitate communication and understanding of new ideas and concepts. This book is written with this in mind: to promote collaboration across traditional boundaries and promote translational research for patient benefit.

The first two chapters review our current understanding of how we organize and classify the glial cancers. The genetic and epigenetic characteristics that shape the clinical phenotypes seen by clinicians are rapidly evolving, and a snapshot of where we are now highlights new questions for further research. The following two chapters seek to address the vexed question of where glial cancers come from and how they evolve. Given that the brain is, to a first approximation, amitotic, we could ask: “Why are glial cancers so common?”

A key element in the manifest failure of pharmacotherapy is the relatively poor models of disease currently available for drug development. In vitro and in vivo models are discussed in Chaps. 5 and 6 outlining current state-of-the-art thinking and what key issues need to be addressed going forward.

The second part of the book begins to address the issues around patients and how we can treat them. This begins with an overview of novel approaches to one of the mainstays of treatment: ionizing radiation. Novel ionizing

species are discussed and some clinical data presented. This is followed by a comprehensive overview of recent developments in imaging both structure and function of glial cancers.

The next two chapters address pragmatic issues of patient management: surgery and radiation oncology. New developments are highlighted emphasizing the broad spectrum of evolution of neuro-oncology. These chapters are followed by a review of how we can manage the elderly patient. There is a current lack of consensus among clinicians about how best to manage this difficult group. The problem is compounded by a paucity of good-quality robust scientific data on which to base clinical decision making.

The final part of the book examines two key questions going forward: How can we detect brain cancers sooner; and how can we improve clinical trial recruitment? Both will be central to the development of neuro-oncology in the future.

I hope that the clinical and scientific data reviewed in this book stimulate new ideas and collaborations. That is the best tribute we can pay to all those suffering from brain cancer.

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