Preface

Glioblastoma (GBM), the grade IV astrocytoma, is the most common primary adult brain tumor. GBM is a fast-growing and most aggressive type of central nervous system tumor. During the last decade, the scientific community is witnessing an incredible amount of progress and successes in cancer research including glioblastoma biology, especially with the use of various high- throughput studies like genomics, proteomics, and next-generation sequencing. While the median survival remains low despite advances on many aspects, we have begun to understand this extremely complex disease primarily because of the coordinated effort between surgeons, pathologists, oncologists, radiologists, and basic research scientists. Many gene signatures for risk stratification and targets for developing novel therapies have been identified. In this aspect, the efforts made by The Cancer Genome Atlas, USA, are highly commendable.

Unlike many books, this book focuses on various aspects of GBM biology. The chapters are written by experts in their field. The first chapter by Dr. Sujit S Prabhu and his colleagues describes the various adjuncts in the maximal safe surgical resection, which remains the first and most important line of therapy for GBM. The second chapter by Dr. Vani Santosh and her colleagues discusses the recent WHO 2016 classification of glioblastoma, which uses molecular parameters in addition to histology. The next five chapters deal with advances and current understanding of GBM therapy. Drs. Puduvalli and Giglio and their colleagues provide an outline of current treatments and also examine many promising newer approaches. While Chap. 4 by Dr. Kesari and his colleagues describes the current status of various targeted therapies in GBM, Dr. Sanchez-Gomez and her colleagues discuss in their chapter the biology and the current understanding of EGFR targeting in GBM. Dr. Arvind Rao and his colleagues in Chap. 6 present a case for a complementing role for radiogenomics and histomics (computational histology) in the practice of GBM personalized medicine. In the next two chapters contributed from my laboratory, there is an emphasis on the importance of next-generation sequencing in GBM-targeted therapy and a summary of the origin and biology glioma stem-like cells as tumor-initiating cells, their role in therapy resistance and potential methods to target them. Dr. M. Squatrito and his colleagues examine in Chapter 9 the various animal

models to study the biology of GBM and for developing therapeutic strategies. In the last chapter (Chap. 10), Dr. Chitra Sarkar and her colleagues give an update about the pediatric glioma, which is the most common solid tumors of childhood.

The chapters presented in this book deals with various aspects of GBM including biology, pathology, improved surgical resection, and various therapeutic options. There is also an emphasis on the translational potential of various aspects. I sincerely hope this book would be highly useful to clinicians, basic scientists, and more to the students. Further, I would like to acknowledge the contribution of all authors and the team of production group of Springer.

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