
Preface

Pancreatic ductal adenocarcinoma is the fifth leading cause of cancer death in the USA. Approximately 44,000 Americans were diagnosed with the disease in the past year. While the annual incidence for pancreatic cancer has been on an upswing trajectory for the past two decades, the 5-year survival rate has remained flat during the same period. Virtually all of the patients will die from it within 5 years. The pancreatic ductal adenocarcinoma is unique because its late onset in age, high mortality, small tumor samples infiltrated with normal cells (high desmoplasia), and a lack of early detection and effective therapies. Some of these characteristics have made studying this disease a challenge.

Pancreatic cancer develops as a result of the accumulation of genetic alterations in cancer-causing genes such as oncogenes and tumor-suppressor genes. Two decades ago, major progress has been made in identifying important oncogenes and tumor-suppressor genes for the disease and these genes have been verified by whole-genome sequencing this decade in both primary tumors and metastases. New efforts have also been invested in the generation of genetically engineered mouse models based on the genetic profile of human pancreatic cancer. In the past decade, increasing importance has also been attributed to tumor microenvironment, such as angiogenesis, immune cells, pancreatitis, metabolism, and tumor-associated fibroblasts. In this book, we review the classical techniques that have contributed to the advances in pancreatic research and introduce new strategies that we hope will add to the future breakthrough in the field of cancer biology.

This book provides a broad range of protocols for molecular, cellular, pathological, and statistical analyses of sporadic and familial pancreatic cancer. It covers topics from in vitro cell cultures to in vivo mouse models, DNA to protein manipulation, and genetic and epigenetic analyses to treatment development. These protocols were kindly contributed by scientists who have been working diligently in combating pancreatic cancer, and therefore we hope that this book will be an invaluable source of proven protocols to those who are interested in joining our fight against pancreatic cancer.

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