

Preface

Lung cancer is the leading cause of cancer-related death worldwide that makes up 27% of all cancer deaths and brings significant socioeconomic impact to patients, their families, and society. Non-small cell lung carcinoma (NSCLC) accounts for the majority of lung tumors. Among NSCLCs, adenocarcinoma and squamous cell carcinoma are the two major histological types, representing 60–70% of all lung cancers. Even though numerous research efforts have been devoted to the development of lung cancer treatment over the past few decades, the overall five-year survival rate is still about 17% according to American Society of Clinical Oncology (ASCO). The high mortality of lung cancer worldwide is largely attributable to the difficulty of obtaining an early diagnosis and the lack of effective therapeutic methods. With the expansion of available high-throughput genomics technologies such as DNA microarray and next generation sequencing (NGS) in the past two decades, many studies have performed high throughput screening to better elucidate lung cancer etiology. Based on genomic analyses, researchers can further analyze and investigate possible regulatory mechanisms of human genes and diseases in order to discover potential therapeutic targets or predictive biomarkers. To improve survival rates in lung cancer patients, a comprehensive analysis of the molecular signature of the carcinogenic processes in NSCLC is needed to identify better predictive biomarkers for diagnosis and prognosis, and new molecular targets for drug development or radiation treatment. In this book, we have edited to put together many papers published by AME journals on various topics including “Genetic Changes, Screening for Lung Cancer, Diagnosis of Lung Cancer, Treatment of Lung Cancer, Prognosis of Lung Cancer, New Drug Development, and Design and Statistical Principles of the Trial. Moreover, on January 20, 2015, President Obama announced the Precision Medicine Initiative (PMI) that was planned to lead Americans into a new era of medicine in which researchers, health-care providers and patients work together to develop individualized care through research and technology. The US President asked for \$215 million to support the Initiative in 2016. Of this total proposed budget, \$130 million was scheduled to build a national, large-scale research cohort, and \$70 million was scheduled to lead efforts in cancer genomics with the National Cancer Institute. Furthermore, a similar initiative has been announced in China. The government of China will invest \$10 billion on Precision Medicine before 2030. Therefore, precision medicine is an emerging and important field for improving treatment modality for many different diseases. Since the AME Publishing Company has been making a great effort to publish many top quality papers focusing on lung cancer, I am sure that this book will be serving as a good beginning for advancing precision medicine of lung cancer treatment.

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