In March 2012, the Japanese Respiratory Society (JRS) intends to launch its official English journal, Respiratory Investigation, as an online-based journal.

The JRS was established in 1961 as a society for respiratory science and medicine, independent of the traditional tuberculosis society. Therefore, the JRS has a history spanning more than 50 years. In 1988, the JRS joined with its sister societies in neighboring Asian countries, as well as in Pan-Pacific countries, to establish the Asian Pacific Society of Respirology (APSR). In 2000, the JRS began the international session in its annual scientific meeting. Currently, we mutually invite researchers from the American Thoracic Society (ATS), the European Respiratory Society (ERS), and our homegrown APSR to the annual JRS meeting. In 2006, we introduced the Scientific Assemblies of the JRS structure and its annual meeting. This consists of 10 assemblies: Cell and Molecular Biology (CMB); Allergy, Immunology, and Inflammation (AII); Structure and Function (SF); Obstructive Lung Diseases (OLD); Diffuse Lung Diseases (DLD); Infectious and Tuberculosis (IT); Thoracic Oncology (TO); Respiratory Care (RC); Clinical Problems (CP); and Pulmonary Circulation and Lung Injury (PCLI). Both senior and young JRS physicians in their respective assemblies now actively join and work with similar assemblies in the ATS, ERS, and APSR to create the best program at the meeting, and publish their research in a number of English language journals. Through these international and domestic scientific and clinical research activities, and based on the current developments in electronic publishing, we, the JRS, believe that it is an opportune time to realize our long-incubated plan of launching an English language journal.

Respiratory medicine covers a huge range of diseases, as exemplified in the names of our 10 Scientific Assemblies. However, during the 20th century, the major respiratory diseases have shifted significantly— from infectious diseases to inflammatory diseases, and finally to malignant diseases— as a result of lifestyle and societal changes due to industrial development, the tobacco epidemic, public health control, and the aging of population. However, respiratory medicine has used state-of-the-art imaging techniques since the early 20th century, due to the advantages of air-water contrast in chest X-ray. In addition, the discovery of antibiotics has also dramatically changed the treatment of infectious respiratory diseases. The era of pulmonary physiology in the 1960s provided an understanding of chronic obstructive pulmonary disease and bronchial asthma, and pulmonary care medicine developed as result of lung function research. The current major disease targets are lung cancer, malignant mesothelioma, and chronic inflammatory diseases such as idiopathic pulmonary fibrosis. In pursuit of better interventions for these diseases, scientific research on the pathogenesis of chronic and non-infectious diseases is indispensable.

A basic question in our field that needs to be addressed is "what is the biology of the lung in health and disease?" During lung morphogenesis, the endoderm evolves into the airway and alveolar epithelium, and mesenchymal progenitor cells evolve into alveolar capillaries for gas exchange. These components merge long before birth, when inspiration and expiration begin, at approximately 15 weeks of embryonic development. Although we do not yet fully understand how lung carcinogenesis occurs, or the molecular and cellular mechanisms underlying lung fibrosis formation, our understanding is developing rapidly. The technical developments of genetically modified animals such as knockout mice and GFP-tagging methods have provided modern tools for elucidating complicated molecular and cellular mechanisms. Recombinant DNA techniques that were developed in the early 1970s opened the door to the human genome project in 1993. Incredible technical developments and those in computer science enabled completion of the mapping and decoding of the human genome in 2001. More recently, this knowledge has been combined with the microarray technique to develop expression microarrays, SNP microarrays, the ChIP-chip technique, and tiling microarrays, and also the analysis of data using computational medicine. In the near future, next-generation sequencing will enable personal genome information to be utilized in the clinical setting.

Currently, the 21st century respiratory medicine has already started using targeted therapy for lung cancer, ahead of other medical specialties. For example, the discovery of the EGFR driver mutation is changing the notion of cancer treatment. Three important messages emerge from a diagnosis of EGFR driver mutation and treatment with kinase inhibitors, all profoundly related to lung biology and Asian ethnicity.

First, the basic understanding that the signaling consequence of the EGFR driver mutation imparts a “gain of function” for cancer cell survival. This alters the notion that cancer is simply a proliferative disease, since anti-apoptosis and survival of cancer cells play an essential role. The mesmerizing “super-responder” effect of short-term tumor
shrinkage induced by targeting drugs is achieved by cell-death mechanism through shutting down the strong survival signal.

Second, the EGFR driver mutation is lung tissue specific. Most (although not 100%) of patients showing a super-response to these targeting inhibitors are patients with lung adenocarcinoma, and a small percentage have squamous cell carcinoma. However, no such effect was observed in patients who have other organ tumors such as gastrointestinal cancer, breast cancer, or brain cancer. This suggests a novel idea that lung cancers probably involve a system of differentiated lung epithelial cells. In this regard, although the specialty of medical oncology emerged in the United States of America, chest physicians can share the treatments for patients with lung cancer based on their knowledge of lung biology.

Third, there is a high incidence of the EGFR mutation among Asians. Surprisingly, in Japan, Korea, and China, nearly 70–75% of non-smokers with lung adenocarcinoma are diagnosed as harboring the EGFR driver mutation. This leads to the novel concept that the mechanism of lung carcinogenesis is not always universal, since some mechanisms may have an ethnic-dependent genomic background.

In the 21st century, genome-based, personalized, and computational medicine will develop more rapidly than currently estimated. Because Respiratory Investigation will be launched in this exciting era of computational medicine, a particular emphasis should be placed on studies of disease mechanisms based on Asian ethnicity, because these mechanisms would not draw attention in journals from other geographical areas. We have already recognized that diffuse panbronchiolitis is a disease found exclusively in Far East Asians, a clear contrast to cystic fibrosis in Caucasians. Furthermore, common diseases, such as chronic obstructive pulmonary disease and asthma, might have emerged from a different genomic background in Asians. In the 21st century, these findings will pave the way to personalized medicine. Because Respiratory Investigation is a journal published in Japan, studies based on the analysis of Asian genomic information will be one of the major focuses of the journal.

We now have a tremendous opportunity to perform therapeutic interventions for intractable diseases using novel drugs based on recent basic research. For example, not only targeting drugs for lung cancer but also anti-fibrotic and anti-angiogenic drugs for lung fibrosis are currently in clinical trials or have been recently approved. Combination trials for lung fibrosis using new drugs will be required to obtain better clinical evidence. Papers on such pilot-level clinical trials are also welcome in this new journal. In addition, the JRS Scientific Assemblies will translate the domestic Japanese guidelines into English and publish these in this new journal. We welcome outstanding papers from overseas to Respiratory Investigation to promote the mutual exchange of information and understanding of clinical problems, which are no doubt important goals for this new English language journal. We would be very pleased if you would consider our new journal as one of your favorite resources of information, and we sincerely hope for your participation to make this journal superior and unique in the field of lung biology and respiratory medicine.

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