

## ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

Issue: *Advances Against Aspergillosis***Preface for *Advances Against Aspergillosis***

The fungal genus *Aspergillus* comprises hundreds of species and is an extremely complex taxonomic collection of organisms, including some cryptic species. These molds are ubiquitous in nature, found on decaying organic matter, in the soil, and in marine environments. The saprophytic aspect of *Aspergillus* is very important with respect to environmental ecology. In relationship to humans, *Aspergillus* is important for agricultural, industrial, and medical reasons. In agricultural settings, contamination of food crops with aflatoxin, produced by toxigenic *Aspergillus flavus* is a worldwide problem, which results in the subsequent increased exposure of humans consuming these foods to aflatoxin (a carcinogen). An industrial application of certain *Aspergillus* species is their use in performing specific fermentations, such as in the manufacturing of sake. Medically, about 20 species of *Aspergillus* have been shown to cause disease, with a single species, *A. fumigatus*, responsible for the vast majority of infections and allergies. Although usually an opportunistic pathogen in humans, *A. fumigatus* can be a primary pathogen in animals. Invasive pulmonary aspergillosis is particularly important as a cause of a rapidly fatal disease in avian populations like chickens and turkeys. For humans, aspergillosis has become the fourth leading opportunistic infection of immunocompromised individuals. It is a primarily invasive pulmonary disease, but about one-third of patients have multiple organ involvement, with CNS disease being frequent and often fatal. In spite of advances in antifungal therapy, morbidity and mortality remain high. In addition, *Aspergillus* species cause other diseases in humans that include keratitis, allergic bronchopulmonary aspergillosis in asthma or cystic fibrosis, otomycosis, and several forms of rhinosinusitis and mycotoxicosis.

Recognizing the growing importance of *Aspergillus*, particularly as a cause of human disease, Drs. David W. Denning, William J. Steinbach, and David A. Stevens organized and chaired the inaugural “Advances Against Aspergillosis” conference held in San Francisco in September 2004. With the success of this first meeting, they organized subsequent conferences that have been held every two years. The primary goals have been to bring together clinicians, nurses, clinical laboratorians, epidemiologists, geneticists, molecular biologists, and basic researchers, along with the leading experts in each of these areas from around the world, as well as the introduction of new topics and presenters, and the establishment of new areas of collaborative research and scientific interaction among the different scientific disciplines represented.

The 5th “Advances Against Aspergillosis” was held in Istanbul, Turkey on January 26–28, 2012, with 375 registered attendees from 39 countries and various educational backgrounds attending. The chairs and the scientific committee developed a program that included 40 invited talks, 6 chosen from submitted abstracts, and 144 posters. Sessions included management and treatment of aspergillosis, pathogenesis and immunology, new disease associations, basic biology, non-*fumigatus* *Aspergillus* species, genomics and proteomics, diagnostics,

and novel antifungal agents. Poster presentations encompassed all aspects of the study of *Aspergillus*. The full program and programs from past conferences can be viewed at <http://www.advancesagainstaspergillosis.org>; additional slides and abstracts can be seen at <http://www.aspergillus.org.uk>.

The papers included in two volumes of *Annals of the New York Academy of Sciences* provide a cross-section of the information presented at the 5th “Advances Against Aspergillosis.” Together with the chairs and the scientific committee, we wish to thank the eleven sponsors whose donations allowed the conference to be held, and for scholarships that were given to 28 deserving applicants; the speakers, poster presenters, and attendees, all of whom made the conference a success; the authors of the papers in the two volumes for their time and effort in writing reviews; and the individuals who gave freely of their time in reviewing the manuscripts. We also thank Dr. Douglas Braaten, editor-in-chief, *Annals*, for agreeing to publish the collection of reviews, and for the assistance that he and his staff provided. We look forward to convening the 6th “Advances Against Aspergillosis” in 2014; up-to-date information will be posted at <http://www.advancesagainstaspergillosis.org>.

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