

Mycology newsletter

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A new international meeting on *Aspergillus*

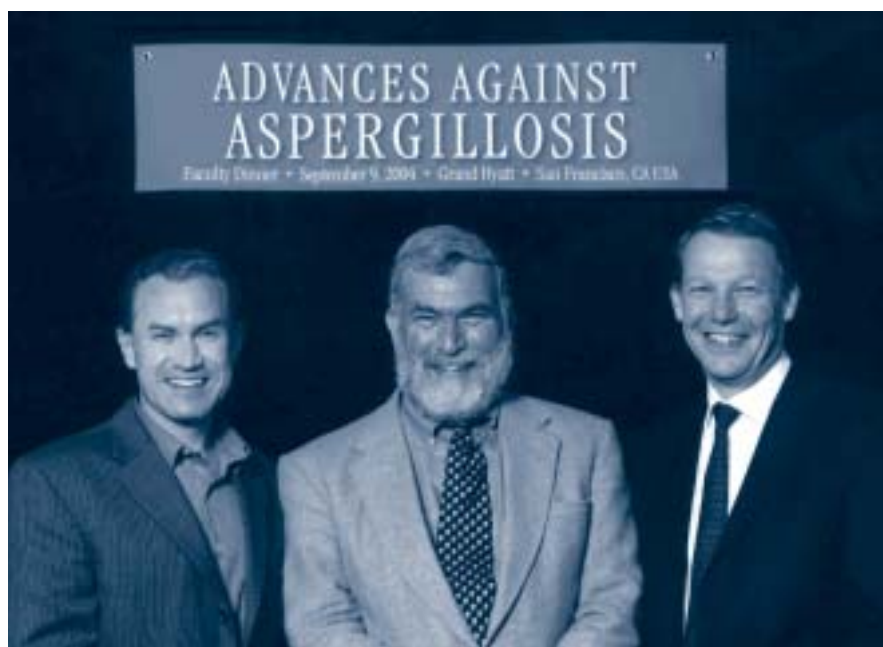
Advances Against Aspergillosis



A new international monothematic Congress on *Aspergillus* and aspergillosis has begun. This is a remarkable event, bringing together from world-wide the leading scientists and clinicians to present their state-of-the-art research and insights on *Aspergillus* and aspergillosis. In this article the founders, David A. Stevens, David W. Denning and William J. Steinbach, explain the genesis of the meeting, the inspiring principles and the design of its first edition held at San Francisco on September 2004. In addition, a synopsis of the meeting sessions is presented to give the reader an overview of the various presentations and events.

The inaugural meeting of Advances Against Aspergillosis was held from Sept. 9-11, 2004 at the Grand Hyatt Hotel in San Francisco. Overall, this new international meeting was designed as a way of assembling many of the leading clinicians and basic scientists from around the world to drive forward the scientific and medical research agenda in *Aspergillus* and aspergillosis. The international flavor of the meeting was evidenced by the inclusion of 60 Faculty from 12 countries. The strong scientific program and attractive venue of San Francisco proved to be an excellent combination, with 364 registrants from 28 countries. Attendees included clinicians (oncologists, hematologists, pulmonologists, infectious disease specialists), basic research scientists (mycologists, immunologists), medical technologists, veterinarians, industrial hygienists, graduate and post-doctoral students, as well as pharmaceutical industry representatives. The generous sponsorship of numerous pharmaceutical companies helped offset the costs of the meeting and provided additional satellite symposia, as well as social events. Support from the International Society for Human and Animal Mycology (ISHAM) was used for important travel scholarships to allow young scientists that had submitted an abstract for poster presentation to attend the meeting. Three of these awards were made, two other donors funded two other awardees, and the meeting offered funding to 14 others.

Day one of the meeting included open registration, and a welcome reception, sponsored in part by Vicuron Pharmaceuticals, for registrants and faculty. The reception was held on the 36th floor of the Grand Hyatt providing stunningly clear views of San Francisco and a friendly atmosphere for the attendees to mingle, renew friendships, and create new ones. A dinner for the faculty and their guests was hosted by Gilead Sciences. Open to all attendees was an evening dinner satellite symposium sponsored by Merck following the welcome reception. In



William J. Steinbach, David A. Stevens, David W. Denning

this symposium current clinical issues of treatment using the newer antifungals and criteria for diagnosis of aspergillosis were presented by J. Perfect and W. Hope. Two additional breakfast symposia were open to all attendees. The initial session began at 7:00 AM Friday morning and was co-sponsored by BioRad Laboratories and Enzon Pharmaceuticals. Among the issues discussed were new diagnostic testing assays, antifungal susceptibility testing patterns and clinical response of aspergillosis patients to lipid-formulated amphotericin B. The faculty included P. Pappas, P. Verweij, P. Chandraskar, and M. Kleinberg. A second breakfast symposium sponsored by Schering-Plough was held the following day and included talks on oral prophylaxis and chronic pulmonary aspergillosis by E. Bow and D. Denning.

Friday morning began the first of two full days of scientific sessions. The official opening of the meeting was performed by Dr. David A. Stevens, who welcomed all and provided a synopsis of the genesis of the meeting. The evolution of the meeting began with the writing of a review paper, which evolved into a 173-page full supplement published in 2003 by "Clinical Infectious Diseases", with further evolution into the idea of organizing a meeting

solely dedicated to *Aspergillus*, to finally the meeting proper. Drs. Stevens, Denning, and Steinbach became the Chairs of the meeting, inviting other interested scientists to participate in the Organizing (five members) and Scientific (12 members) committees. The goals for the meeting were numerous and translational in nature. They wished to assemble the world's leading clinicians and scientists to advance the scientific and medical research agenda in *Aspergillus* and aspergillosis, to present the very latest advances and thoughts on aspergillosis from speakers actively advancing the field with new discoveries, and to engender collaborative relationships amongst clinicians, basic scientists, as well as industry to further advance the field. Thus, the program for the meeting encompassed a broad range of topics including basic research, genomics, molecular biology, molecular genetics, immunology, pathogenesis, clinical medicine, veterinary medicine, diagnostics and epidemiology. Overall, the program included 45 invited speakers, 4 speakers chosen from submitted abstracts, 87 submitted abstracts presented in posters, and three industry sponsored satellite symposia.

The scientific sessions began with epidemiology of *Aspergillus*, focusing on the frequency of infec-

tion and mortality in humans and animals, environmental sources of infection including water supplies in patient rooms, and links of response to *Aspergillus* to asthma (D. Warnock, A. Warris, E. Tovey, C. Hogaboam, and L. Tell). The following session addressed the difficult issues of diagnosis of aspergillosis from phenotypic aspects to molecular methods used in clinical laboratories, as well as how radiological diagnostics contribute to the overall clinical differential decision making process (N. McClenney, C. Morrison, D. Buchheidt, and R. Greene). A novel aspect of the programming for the meeting became apparent with the intentional interspersing of sessions dealing with clinical sciences with those of basic sciences, allowing a marriage of the two crucial halves of scientific advancement. Thus, the third session of Friday initiated the basic science and molecular biology part of the program. The session topics began with an overview and up-date of the four genome sequencing projects related to species of *Aspergillus*. These sequences are due for publication in the fall of 2004 and will become an invaluable resource for the *Aspergillus* community. Also discussed were the topics of sexual reproduction in *A. fumigatus*, comparative cell wall structure and function and biosynthesis of ergosterol and transporter genes in relation to the development of drug resistance (W. Nierman, P. Dyer, J-P. Latgé, and G. Goldman). The intensity of the scientific portion of the meeting became apparent with three additional sessions following the afternoon break. The first of these returned to the clinical side with a roundtable discussion of the utility and key issues debating prophylactic versus empirical antifungal therapy in immunocompromised patients (K. Marr and E. Anaissie) in a session chaired by P. Pizzo, who pioneered the concept, and T. Walsh.

A true highlight of the conference followed with four speakers chosen by the conference committee members from the submitted abstracts. Each of the four 10 minute talks were superbly presented by the young investigators and exam-

ined characterization of the stuA protein (D. Sheppard), role of neutrophils in a model of ABPA (S. Park), the contribution of platelets to host-defense (C. Lass-Flörl) and the gene LaeA as a determinant of virulence (S. Balajee). These young investigators are to be commended for their efforts and preparation and will undoubtedly be important forces in the future of *Aspergillus* research.

The final session of Friday was a roundtable discussion on various *in vivo* models of aspergillosis and their use in studies of pathogenesis, virulence, and therapeutics. The two primary talks provided overviews of the past use of avian and mammalian models of infection and the future directions of developing animal models of aspergillosis that better emulate human disease (K. Clemons and T. Patterson). Included in the session were two shorter talks presenting recent studies using insects for models of infection (D. Kontoyiannis and D. Law).

The spectacular highlight of the social program occurred Friday evening with a 3 hour dinner cruise aboard the *Horatio Hornblower* on San Francisco Bay. The evening was clear with no fog, and the waters calm as the cruise provided captivating views of the Golden Gate Bridge, Alcatraz Island, San Francisco skyline, Bay Bridge and East Bay skylines. The Gail Dobson Quintet Jazz Group provided live entertainment and dancing. The evening proved very enjoyable, with many commenting on how surprisingly quickly the cruise was over and back in dock.

Saturday morning began the final day of packed scientific sessions. In the opening session the biology of *Aspergillus* was addressed with discussions on the synthesis and importance of conidial pigments and their contribution to escape from oxidative killing, the regulation of conidial germination and subsequent hyphal growth by MAP kinase, how well *Aspergillus* is able to grow at 37°C and an overview of *Aspergillus* mycotoxins, as well as their effects on growth (A. Brakhage, G. May, D. Askew, and K. Kamei). Im-

mediately following was a roundtable discussion on the nuances of *in vitro* antifungal testing of *Aspergillus*. Included were methodologies, and evolving resistance to echinocandins (J. Donnelly and D. Perlin). A clinical session on invasive disease in hematologic and immunocompromised patients was next up. The range of topics included disease in leukemic patients, hematologic stem cell transplant recipients, and primary immunodeficiency and pediatric patient populations (R. Herbrecht, C. Cordonnier, B. Segal, and W. Steinbach). Each of these overviews provided insightful clinical perspective for clinicians that do not specialize in these avenues of this infection.

The first session after the lunch break returned to the basic science part of the program covering the area of how *Aspergillus* interacts with its environment *in vitro*, and *in vivo*. These talks covered polarized growth, interactions with epithelial cells in the host, how the organism regulates the synthesis of amino acids, and the secretion of over 800 proteins from *A. fumigatus* (M. Moman, M. Moore, S. Krappmann, and D. Archer). A return to the clinical aspects followed in the next session, which provided up-dates on the clinical presentation, treatment issues, and risk factors for aspergillosis in solid organ transplant patients. These included liver, lung and heart transplant patients (N. Singh, J. Golden, and J. Montoya).

The final session of the conference proved well worth the effort for those attendees staying until the end. The session covered the general topic of immunology and host-response to *Aspergillus*. The importance of innate immunity and what controls and regulates innate defense were well addressed. These ranged from the involvement of lung surfactant proteins and their role in innate immunity to the control of immunity by various cytokines, chemokines, and CSFs. How the acquired host-response is initiated via Toll-like receptors was also addressed. The importance of chemokine receptors was demonstrated by the increased susceptibil-

ity of animals deficient for CXCR2 or increased PMN response by over-expression of a CXCR1, as well as the role of GM-CSF and proinflammatory cytokines in macrophage killing. Additional talks dealt with ABPA and its pathology, progression and the immune response of Th2 promoting the disease. The antigenicity of various proteins derived from *Aspergillus* and the specificity of host-response to them during ABPA provided information on the role certain fungal proteins may play in a particular type of disease. Lastly, the prevention of aspergillosis was discussed and the utility of dendritic cell-based vaccines using various antigens in a CpG adjuvant, results that are encouraging for the future prevention of infection. Seven speakers were involved in this final session (T. Madan, T. Walsh, B. Mehrad, E. Brummer, R. Moss, V. Kurup, and S. Bellocchio). Dr. David Denning closed the inaugural meeting with comments thanking the attendees, all sponsors, and the faculty.

In summation, the first Advances Against Aspergillosis conference was extremely successful on several fronts. A fundamental tenet of this meeting was it brought together scientists from around the world and from both clinical and basic sciences, providing a venue for interactions and establishment of increased collaborative research. The Conference Chairs and the Committee members look forward to the second meeting, to be held in Europe (Athens) in early 2006.

The complete 2004 conference syllabus as a PDF file, as well as meeting updates and information for the 2006 conference, are available at the conference website:

www.advancesagainstaspergillosis.org
In addition, a supplement of speaker's papers from the 2004 meeting will be published in "Medical Mycology" in 2005.

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