

THE HARTWELL FOUNDATION

2006 Individual Biomedical Research Award

Bruce Klein, MD

Professor

**Departments of Pediatrics, Internal Medicine,
Medical Microbiology and Immunology**

University of Wisconsin Madison



Stemming the Growing Tide of Systemic Fungal Infections in Children

Dr. Klein presents a fresh perspective on the cause of deadly secondary infections that often occur in a hospital-like setting due to fungi, including molds and yeast. Such infections are prevalent in vulnerable patients within neonatal and pediatric intensive care or hematology-oncology units. Currently, there are relatively few drugs available to treat these infections and the fungi are acquiring resistance. When a susceptible individual inhales mold spores into their lungs, the spores sense a change in temperature and switch to a “virulent” yeast form. Virulence in the fungi that threaten child health thus hinges on the switching of fungal forms. In a seminal paper published in April 2006, Klein described the unique gene, DRK1, which apparently controls this switching mechanism. He observed that since no homolog for the gene exists in humans, the gene could serve as a target for antifungal drug development and possibly, a vaccine. Based on this information, Dr. Klein proposes to use a powerful new technology that involves chemical genetics for screening tens of thousands of small molecules and compounds quickly and easily to find promising new anti-fungal drugs. If successful, compounds that show promise in pre-clinical studies will become candidates for later clinical trials and additional research.