Problem Solved by the Technology

Fungal infections are an increasingly common cause of morbidity and mortality in patients with compromised immune function. Unfortunately, current antifungal drug therapy is quite limited, particularly when compared to antibacterial therapy. Among the available antifungal drugs, there are only three mechanistic classes used to treat life-threatening fungal infections and two of these classes have significant toxicities along with drug-drug interactions, hence limiting their potential in treating patients. Due to the lack of convenient, safe and effective oral therapy, new structural and mechanistic classes of antifungal therapeutics are needed to improve treatment options and to counter increasing resistance to currently used agents, especially for immunocompromised patients.

Applications

This invention identifies and validates the mechanistic characterization of PDK1 inhibitors as novel antifungal agents with potent activity against planktonic and biofilm Candida species and Cryptococcus neoformans. PDK1 is absolutely essential for fungal survival and inhibiting this target results in cell lysis and death.

Advantages

The inventors show that PDK1 is a novel and effective way to treat fungal infections. These targets represent new structural and mechanism that may have advantages over the present toxic and resistant-laden therapies. In addition, these non-intrusive drug candidates that inhibit PDK1 can conveniently be given orally, are well tolerated, and several compounds are available and in the clinic.

Lead Inventors:

Damian J. Krysan, M.D., Ph.D., Associate Professor - Department of Pediatrics and Department of Microbiology and Immunology
Dr. Krysan's research focuses on antifungal drug discovery and fungal pathogenesis.

Intellectual Property Status: Technology 6-1938

Patents filed in the U.S., Canada and Australia in 2011.