



Rapid, efficient and low-cost nucleic acid identification tool for pathogenic *Candida* in human test samples with clinical relevance and increased accuracy and reliability

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Developing Rapid, Accurate and Sensitive Molecular Systems for detecting pathogenic *Candida* species

Abstract

Invasive fungal infections such as invasive candidiasis and candidemia affect over 250,000 people annually and result in more than 50,000 deaths worldwide.¹ The close relationships among the pathogenic *Candida* species creates challenges in diagnosing the specific cause of infection with currently available methods, which lack accuracy, reproducibility, sensitivity and reliability (e.g., T2Candida). Thus, novel detection methods are needed to successfully diagnose the cause of infection and reduce unnecessary side effects, hospital expenditures and deaths.

The present invention provides a reliable, accurate, reproducible, and sensitive rapid polymerase chain reaction (PCR) (regular and real-time PCR) technique for species-specific detection. This can aid in the diagnosis, identification, or monitoring of the progress of therapy for diseases caused by *Candida* species. This technique uses custom-designed species-specific biomarkers targeting the fungus specific *ERG11* gene of the *Candida* species, which can be used to detect and distinguish eight species of *Candida* from a variety of human biological samples including *C. albicans*, *C. dubliniensis*, *C. parapsilosis*, *C. orthopsilosis*, *C. metapsilosis*, *C. glabrata*, *C. krusei*, and *C. tropicalis*.

Applications

- Clinical detection of eight pathogenic *Candida* species using a rapid polymerase chain reaction (PCR) method (regular and real-time PCR).
- *Candida* detection in test samples from humans such as blood, blood derived samples, tissues, tissue-derived samples and other body fluids.
- Diagnosis kit development aiding in the identification and monitoring of disease progression.
- Using this invention, a diagnostic device could be developed with the capabilities to specifically and accurately diagnose the cause of *Candida* infections.

Advantages

- Effective differentiation and accurate identification of the *Candida* species among the commonly found medically important fungi compared to current methods.
- Reliable, accurate, reproducible and increased sensitivity compared to existing techniques.