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## Single-tube, dual channel pentaplexing for the identification of Candida strains associated with human infection

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### Abstract

Invasive candidiasis is one of the most common nosocomial fungal infections worldwide. Delayed implementation of effective antifungal treatment caused by inefficient Candida diagnosis contributes to its notoriously high mortality rates. The availability of better Candida diagnostic tools would positively impact patient outcomes. Here, we report on the development of a single-tube, dual channel pentaplex molecular diagnostic assay based on Multiplex Probe Amplification (MPA) technology. It allows simultaneous identification of *C. auris*, *C. glabrata* and *C. krusei*, at species-level as well as of six additional albicans and non-albicans pathogenic Candida at genus level. The assay overcomes the one-channel one-biomarker limitation of qPCR-based assays. Assay specificities are conferred by unique biomarker probe pairs with characteristic melting temperatures; post-amplification melting curve analysis allows simple identification of the infectious agent. Alerting for the presence of *C. auris*, the well-characterised multi-drug resistant outbreak strain, will facilitate informed therapy decisions and aid antifungal stewardship. The MPA-Candida assay can also be coupled to a pan-Fungal assay when differentiation between fungal and bacterial infections might be desirable. Its multiplexing capacity, detection range, specificity and sensitivity suggest the potential use of this novel MPA-Candida assay in clinical diagnosis and in the control and management of hospital outbreaks.

### Keywords

KeyWords Plus: INTERNAL TRANSCRIBED SPACER; INVASIVE FUNGAL-INFECTIONS; RIBOSOMAL DNA; EPIDEMIOLOGY; DIAGNOSIS; DISEASE; PCR; RNA; REGION

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