

Real Time PCR assay for detection of Valley Fever causing *Coccidioides*

Published date: May 11, 2018

Technology description

Researchers at TGen and Northern Arizona University have developed a robust and reliable real-time polymerase chain reaction (PCR) assay ("CocciEnv") capable of detecting and quantifying in samples the two Valley Fever-causing *Coccidioides* fungal species: *C. immitis* and *C. posadasii*. Using the CocciEnv assay in a lab- or field-deployable detection system to identify and quantify *Coccidioides* in complex environmental samples, such as soil, can improve the management of exposure risk for workers and communities proximate to soil disturbing activities, such as building and road construction. Additionally, the CocciEnv assay has further application for clinicians diagnosing illness in humans and animals.

C. immitis and *C. posadasii* are soil fungi that infect humans and animals via aerosolized arthroconidia upon soil disruption. Valley Fever commonly causes a progressive pulmonary infection in the host, but can also disseminate to other body parts including skin, brain, bone, and meninges. Depending on the severity, these infections can result in death. Studies have shown that the sporadic environmental distribution of *Coccidioides* does not necessarily depend on soil characteristics and that biotic factors may play an as of yet unexplored role, further complicating the task of screening soil samples for *Coccidioides*.

The CocciEnv assay targets a conserved copia-like retrotransposon in a conserved repeated region of the common *Coccidioides* genome using a probe and a multiplex set of forward primers and reverse primers. This results in an improved capture of *Coccidioides* DNA in samples as compared to previously developed assays with equivalent sensitivity and specificity, and produces rapid and accurate analysis previously unavailable for complex environmental samples such as soil.

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