

Technology Opportunity, Ref. No. UZ-17/406

Fast and reliable detection of dermatophyte infections

This molecular diagnostics test allows rapid and reliable identification of 18 dermatophyte species in clinical samples with a small set of optimized sloppy molecular beacons (SMP). Additional features include distinction of zoophilic and anthropophilic infections as well as detection of non-dermatophyte fungal species.

Keywords	dermatophytes, skin, hair and nail fungal infections, sloppy molecular beacons (SMP), multiplex PCR, clinical samples
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Reference	in preparation
Background	Conventional diagnostics of dermatophyte infections via culture methods takes up to four weeks. Shorter test times with higher sensitivities are possible with molecular diagnostics, but the required number of primers puts a limit to this approach. Typically, 3 to 4 species are detected in multiplex PCR by using the same number of primer pairs or probes. More discriminative and comprehensive molecular tests are needed to install molecular diagnostics in routine dermatophyte analytics as a true alternative to conventional diagnostics. We propose a new and optimized test system that allows the identification of virtually all clinically relevant dermatophytes.
Invention	<p>Using only three SMPs, we were able to identify the most prevalent dermatophyte species (i.e. 99% of all clinically relevant species) including <i>Trichophyton rubrum</i>, <i>T. interdigitale</i>, <i>T. mentagrophytes</i>, <i>T. violaceum</i>, <i>T. benhamiae</i>, <i>T. tonsurans</i>, <i>T. verrucosum</i>, <i>T. soudanense</i>, <i>Microsporum canis</i>, <i>M. audouinii</i>, <i>Nannizzia gypsea</i>, and <i>Epidermophyton floccosum</i> in a single PCR run.</p> <p>A second set of probes allows the discrimination of <i>T. violaceum</i> and <i>T. soudanense</i>, as well as zoophilic <i>T. mentagrophytes</i> and anthropophilic <i>T. interdigitale</i>, which is important for patient management. Furthermore, a number of non-dermatophytes are identified using the same set of probes including <i>Candida sp.</i> and <i>Aspergillus sp.</i> that cause about 5 – 10% of all nail infections. Test results are available within in a few hours and no DNA sequencing is required.</p> <p>The test has been validated on more than 200 clinical samples and test results were confirmed by comparison with conventional diagnostics.</p>
Fields of Use	Test kits for the detection of all clinically relevant dermatophytes and non-dermatophytes causing skin, hair and nail infections.
Patent Status	Patent application filed
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