

Rapid PCR-based blood test for Detection of Bacteria

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Technology description

Value Proposition:

JHU scientists have produced an innovative PCR-based assay system that rapidly provides broad bacterial detection, gram status, and species identification in a 2-4 hour time frame. This clinical assay is a vast improvement over currently used methods for diagnosis of a bacterial infection that often require days for bacterial culturing and identification. This system is based on a patented combination of probes to both common and unique regions of bacterial DNA. Sample processing and amplification methods have been optimized for efficiency and accuracy. The system has proven effective for pathogen detection in whole blood, synovial fluid and cerebrospinal fluid.

Technical Details:

An innovative technique that establishes a unique and highly specific assay, which eliminates ubiquitous background DNA in all PCR reagents (Taq polymerase, primers, dNTP's, PCR buffer, MgC12) by employing the use of a carefully selected restriction enzyme digest. This protocol thus allows for contamination-free universal amplification of bacterial DNA and subsequent identification of clinically significant bacterial infections.

Looking for Partners:

There are numerous clinical scenarios where application of this invention would aid in expediting reliable and accurate diagnosis of local and systemic infections. In addition, the assay can be implemented in routine PCR applications in a basic laboratory setting. The commercial applications of this technology are most obvious in the field of diagnostics and screening. This particular assay can be used towards the identification of a variety of both local and systemic infectious diseases: pneumonia, wound infections, neonatal sepsis, infective endocarditis, and many other serious infections.

Advantages

- The breadth of the test eliminates the need to suspect a particular pathogen in a patient sample before ordering a diagnostic assay.
- Time from sample collection to species identification and diagnosis is reduced from days to as little as two hours and drastically reduces time from first appearance of symptoms to patient treatment.
- Rapid diagnosis and identification of pathogens decreases time to administration of the best therapeutic agents to efficiently eliminate bacterial infection and rapidly relieve symptoms.

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