Opinion Article

iMedPub Journals
http://www.imedpub.com

Archives of Clinical Microbiology
ISSN 1989-8436

2021
Vol. 12 No. S6:3

A Short Note on Diagnostic Molecular Microbiology

Eliana Vespero*

Department of Endodontics and Molecular Microbiology Laboratory, Queen Mary University, London, England

Received: December 09, 2021; **Accepted:** December 23, 2021; **Published:** December 30, 2021

Corresponding author: Vespero E

Department of Endodontics and Molecular Microbiology Laboratory, Queen Mary University, London, England

dingbaochen@hotmail.com

Citation: Vespero E (2021) A Short Note on Diagnostic Molecular Microbiology. Arch Clin Microbiol Vol.12 No. S6: 003.

Description

In circumstances where an infectious condition is suspected, diagnostic microbiology focuses on laboratory study of clinical specimens. Clinical samples from humans, animals, or food products, as well as samples acquired from the environment, may be used to diagnose staphylococcal infections. The following are some of the topics covered in a presentation about diagnosing staphylococcal infections: Inoculation into general-purpose and selective-differential media; incubation, colony morphology identification, gram staining, and isolation of pure culture; catalase testing; furazolidone susceptibility testing; detection of free coagulase and bound coagulase; identification of bacterial species based on biochemical tests; detection of resistance m (beta-lactamases, methicillin resistance, macrolide, and lincozamine resistance, or, the MLSB resistance mechanism).

In the diagnosis of infectious disorders, molecular testing plays an increasingly important role. It has come a long way since the FDA approved the first probe tests in the early 1990s. The use of molecular techniques in diagnostic microbiology is highlighted, which includes "older" and "newer" probe techniques, qualitative and quantitative RT-PCR, highly multiplexed PCR panels, some of which use sealed microfluidic test cartridges, MALDI TOF, and nuclear magnetic resonance. By technique and target, tests are categorized together. Benefits, disadvantages, and potential difficulties are compared between tests with similar responsibilities for similar analytes.

Microbiologic researches that were not part of our original dreams have now been made possible thanks to new technologies. In patient specimens, next-generation sequencing can detect and quantify microbial communities. This increases the likelihood of separating harmful organisms with large populations from colonizers with smaller populations. The development of cardiovascular disease appears to be linked to specific colonic organism profiles.

The bacteria in a patient's colon could be tested, and if the characteristic were unfavourable, they may be removed and replaced.

Probe techniques were the first molecular diagnostic tests approved by the Food and Drug Administration (FDA). The probes were made using molecular techniques, but only hybridization and detection were done in the clinical laboratory. Because they fill essential gaps, where several probe tests are still widely used today. Some of them entail cutting-edge detection techniques.

RT-PCR is a semi-quantitative method, theoretically defined as a standard curve of nucleotide sequences versus CT can be constructed and then used to determine the amount of analyte in a patient specimen. When attempting to distinguish "just a few" from "none," however, differences in extraction efficiency and the presence of inhibitors can lead to considerable errors, particularly at low levels of analyte.

Next Gen Sequencing (NGS) has led to significant advancements in basic sciences and clinical laboratory medicine, particularly microbiology, hence to advances in sequencing technology. For parallel multistrand sequencing, currently available NGS techniques rely on clonal amplicons. NGS is a great technology for bringing clinical nucleic acid sequence analysis to a new level due to its combination of high-speed and high-throughput data analysis.

Mass Spectrometry (MS) has been employed in microbiology since the 1970s, despite the fact that "molecular diagnostics" is commonly thought to mean nucleic acid based approaches.

MS was almost solely utilised at the time to identify anaerobes by analysing volatile or volatilized short-chain organic acids. Microorganisms developing in colonies on culture plates can now be identified using new MS techniques as a good operational site. This takes 2 to 5 minutes and has the potential to reduce labour costs and improve turnaround time for microbiological culture reports, especially when combined with additional laboratory

automation that is now available. Although the initial expenses are significant, the speed with which results are obtained can have an impact on antibiotic usage and patient outcomes, due to shorter hospitalisation and lower total costs.