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Next Generation Pathogen Diagnostic Panel

Technology description

Problems Addressed

More sensitive and specific than traditional culture-based diagnostics

Can screen a sample for multiple pathogens simultaneously

Easy data analysis

Fast and Inexpensive

Pathogens Validated (additional pathogens being tested)

Respiratory Pathogens	Enteric Pathogens	Repro Pathogens	Mastitis
BVDV (with typing), other pestiviruses, IBR (vs vaccine strain), Bovine Coronavirus, Mycoplasma species, Influenza D, PI3, BRSV, Adenovirus 3, Histophilus somni, Pasturella multocida, Mannheimia haemolytica, Trueperella pyogenes, Bibersteinia trehalosi	E. coli toxins (F41, F5, sta, stx 1,2, eae, cnf 1/2, alpha hly) Salmonella, Rotavirus (A,B,C), Johne's, Clostridium perfringens toxin typing (alpha, beta, beta2, epsilon, iota, cpe), Giardia, Cryptosporidium, Coronavirus	Neospora, Leptospirosis species, Toxoplasma, Chlamydia species, Campylobacter fetus fetus and venerealis, BHV-4, IBR, BVDV, Brucella abortus, T. foetus, Bluetongue/ EHD, Anaplasma marginale, Listeria monocytogenes, Ureaplasma	Staphylococcus aureus, E. coli toxins, Streptococcus agalactiae, Mycoplasma bovis, Prototheca, Streptococcus uberis, Streptococcus dysgalactiae, Coag negative Staphylococcus, Pseudomonas, Klebsiella, Zygomycetes, Aspergillus, Nocardia

Summary

The advantages of a nucleic acid-based technique, such as PCR, are numerous and include speed, sensitivity and specificity. However, PCR has its own challenges in that it is limited by pathogens that can be detected in a single reaction. To address that concern, UGA researchers have developed a Next Generation Sequencing (NGS)-based diagnostic panel that is able to detect the presence of 45 different pathogens using target-specific primers for PCR-mediated amplification. This multiplex panel has been

validated using clinical samples that were subsequently tested with commonly used diagnostic techniques. These results confirm the validity of using NGS-based techniques in veterinary diagnostics.

Application area

Multiplex diagnostic panel for bovine infectious disease
Detects the presence of 45 of the most common pathogens
A multiplicity of sample types can be used, including tissues, blood, milk and swabs

Institution

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