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Innovations in the serological analysis of infectious agents

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Antibody-based detection methods remain a mainstay for the diagnosis of infectious diseases and the evaluation of protection against them. There is a substantial increase in the emergence of new viral agents in the last few decades, possibly due to changing patterns in global travel, trade, farming and life styles. The length of time between the emergence of an infectious agent and the availability of a diagnostic test can inversely influence the extent of spread and damage, due to the delay in the instituting rational interventions. Despite the obvious need for advancement, conventional serological test development still requires the biological identification of immunogenic targets and their production, generally by recombinant technology, both of which are laborious processes. Using a combination of novel computational and wet lab methods, we have developed methods for the rapid identification and synthesis of diagnostic targets; thus, reducing the lead development time and cost of serological assays significantly. Successful integration of a commercial platform technology to multiplex targets resulted in further reduction of the cost and time required for optimal testing. The results are presented in the context of a polymicrobial respiratory disease complex of swine. The described methods have wide application to a variety of pathogens. They enhance the clinical functions of diagnostic laboratories and are useful for infectious disease research.

Biography

Sheela Ramamoorthy is a Veterinarian and Virologist, who obtained her Bachelors in Veterinary Medicine (BVSc) from the Madras Veterinary College in India, MS in Microbiology and Molecular Genetics from the Oklahoma State University, followed by a PhD in Biomedical Sciences from Virginia Tech. She served as the Section Head of Diagnostic Virology and Serology at the University of Georgia Tifton Veterinary Diagnostic Laboratory, before moving to N Dakota State University, where her research is focused on studying vaccine-mediated immunity against viral infections. Her well-funded research group works on translating basic findings into novel vaccines and diagnostics, for agents involved in the porcine respiratory disease syndrome. She had authored over 40 peer-reviewed publications, is a Board Member of the American Association of Veterinary Immunology, she serves as a Reviewer for reputed journals and as a Grant Reviewer for several agencies including the United States Department of Agriculture and National Institutes of Health.

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