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Foodborne diseases and emerging technologies; Producing safe food

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Development of vaccines for effective control of bacterial, viral and protozoal pathogens represents an important development in reducing host morbidity and mortality worldwide. Advancements in the area of biotechnology have increased our innovative potential and allow us to use these technologies to design advanced pathogen control strategies. My laboratory has been working to develop a novel vaccine platform that can provide distinct advantages over traditional classical vaccines. Notably, traditional vaccines tend to be strain or serotype specific and show little or no cross protection to even genetically related strains, our new vaccine technology focuses on creating a single vaccine to protect against multiple serotypes or strains from the same pathogen family by incorporating a single common subunit, produced by bacillus subtilis, into an inactivated orally administered vaccine platform, providing protection against infection and disease by inducing mucosal immunity.

This immunity has proved to be protective against families of pathogens regardless of host species; therefore, our platform not only protects against families of pathogens with a single subunit it furthermore protects multiple host species with the same vaccine. Additionally, the platform integrates additional molecules that can train the immune system or reprogram the pathogen favored immune responses that have previously been pre-trained by host-pathogen interactions, driving the immune response toward host favored protection. An additional distinct advantage of this novel platform is the allowance for immunological differentiation of infected from vaccinated host. Which should prove even more important in the face of emerging diseases, such as SARS-CoV-2? Numerous experimental vaccine challenge trials have been conducted to date in multiple host species utilizing this vaccine platform. The platform has shown efficacy and protection (short term and long term) against bacterial, viral and protozoal pathogens alike. Our ultimate goal of creating a single vaccine for multiple hosts against families of pathogens is advancing the “one health” concept towards a tangible reality today.

Biography

Sherry Layton received her PhD from the University of Arkansas where she studied poultry science. Her early career research in poultry immunology and molecular engineering set the foundation for her pioneering scientific successes in animal and public health. Over the last decade Dr. Layton developed and patented an innovative orally administered sub-unit vaccine platform, Biotech Vac. This research and development led to the recent introduction of Biotech Vac – Salmonella in Latin America, which provides poultry with immunological protection from all mobile Salmonella species, a first in the poultry industry, and will help reduce the risk of food-borne Salmonellosis in humans. Currently, she serves as CEO for Vetanco USA and Chief Scientific Officer for Vetanco International/BV Science, a global animal health and nutrition company where her research focuses on maintaining public and animal health; as well as ensuring food safety globally. Dr. Layton currently leads a research team of veterinarians and scientists in the U.S. and South America and has developed a pipeline of pioneering and effective vaccines. She is currently focused on supporting the introduction of Biotech Vac – Salmonella and Biotech Vac Coccidia in Latin America as well as establishing biologicals in the U.S. market with the newly formed Vetanco USA.