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Decoding immune evading mechanisms of pathogens: Reordering of immunodominance for new and improved vaccines

Over the last 250 years, the use of vaccines, a mainstay of preventative medicine and public health has proven to be one of the most successful and cost-effective medical interventions ever discovered. Despite these great advances to human and animal health of the past 5 decades; the basic technology on which it was created from does not for the most part work against the many remaining pathogens of humans and animals. This is mainly due to the fact that the large list of disease-causing microbes is inherently resistant to current vaccine technologies (e.g. strain-restricted immunity/antigenic variation/poor memory/enhanced disease/incomplete and shortened immunity etc.) some form and represents a major gap in our understanding of the complex evasion mechanisms evolved by the pathogens.

What makes these pathogens so resistant to previous and currently licensed technology appears due to the phenomena of Deceptive Imprinting. "Deceptive Imprinting" is at the heart of a new understating of how pathogens have evolved host evading strategies and explains the way in which these diverse and mutable pathogens create a molecular diversion (decoy) at the level of both the innate and acquired host defense systems-- much like how metallic chaff would confuse a radar system trying to locate a missile or plane. A counter measure first generation technology called Immune Refocusing has been designed specifically to address this evasion mechanism identifies the decoy (metallic chaff) and removes it thus redirecting the host defense system to the more protective regions of the microbe.

This lecture will bring together new paradigm shifting first principals of Deceptive Imprinting, immunology, new insight from querying pathogen genomes through "Pressure Point" Technology and application of the technology of Immune Refocusing. These paradigm shifting scientific insights have opened up fresh new approaches to technical advancement and the development of new antigens that can be used for vaccines and deriving new monoclonal antibodies toward inducing improved and broader protective immunity.

Biography

Peter Lloyd Nara currently holds the Endowed Eugene Lloyd Chair, Professor in Vaccinology, founding Center Director for the Center for Advanced Host Defense, Immunobiotics, and Translational Comparative Medicine in the Department of Biomedical Sciences, in the College of Veterinary Medicine at Iowa State University, adjunct Professor, Microbiology, Carver College of Medicine, University of Iowa and also is the Chief Executive Officer, President, Chairman & co-founder of Biological Mimetics, Inc. He holds a M.Sc. in Immuno-pharmacology, a combined Doctor of Veterinary Medicine and Ph.D. (retro-virology/oncogenesis) from The Ohio State University, 4 year combined residency in Comparative Pathology and NIH post-doctoral Fellowship at the Armed Forces Institute of Pathology and a NIH respectively.

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