J Vaccines Vaccin 2012, 3:4
http://dx.doi.org/10.4172/2157-7560.S1.014

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Vaccines and Vaccination

August 20-22, 2012 Hilton Chicago/Northbrook, USA

Epitope-based immunome-derived vaccines: A strategy for improved design and safety for infectious diseases and biodefense

Anne S. De Groot[1, 2], Timothy J. Messitt[1], Matthew Ardito[1], Christine Boyle[1], Leonard Moise[1, 2], Lesley Dupuy[3], Connie Schmaljohn[3] and William Martin[1]
[1]EpiVax, Inc. Providence, USA
[2]Institute for Immunology and Informatics, University of Rhode Island, Providence, USA
[3]United States Army Research Institute of Infectious Diseases (USAMRIID), USA

Vaccine science has extended beyond genomics and proteomics to also encompass "immunomics", the study of the universe of pathogen-derived or neoplasm-derived peptides that interface with B and T cells of the host immune system. It has been theorized that effective vaccines can be developed using the minimum essential subset of T and B-cell epitopes that comprise the "immunome". We and other researchers are therefore using bioinformatics sequence analysis tools, epitope-mapping tools, microarrays and high-throughput immunology assays to discover the minimal essential components of the immunome beginning with genomic data. The genome-to-vaccine strategy may have a significant advantage over conventional vaccines, as careful selection of vaccine components may diminish undesired side effects as have been observed with whole pathogen and protein subunit vaccines.

New approaches to improving vaccine safety and efficacy are needed to prevent and treat current and future infectious diseases as well as potential biothreat agents. The genome-to-vaccine strategy to produce epitope-based vaccines is a novel approach that addresses these needs and is technologically advancing steadily toward licensure of this new vaccine class. This presentation will bring to the fore the critical parameters thatvaccine developers need to know to harness genomic data to rapidly progress from pre-clinical testing to clinical trialsdrawing upon examples from our genomes-to-vaccine approach to biodefense (Smallpox, Tularemia, EEV) and emerging infectious diseases (pandemic flu).

dr.annie.degroot@gmail.com

Detection of antibody secreting cells (ascs) for measuring polio vaccine-induced human immune responses under field condition by ELISPOT assay

Prashant Sharma[1], Ayan Dey[1], Jae Seung Yang[1], Cecil Czerkinsky
International Vaccine Institute, Republic of Korea

Although the ELISPOT assay has been widely used in human clinical trials for measuring T cell responses, the assay has been underutilized for measuring antibody-secreting B cell (ASC) responses. In the present study, we describe the utilization of ELISPOT assay for enumerating antibody secreting cells (ASCs) to poliovirus (type 1, 2 and 3) in a randomized clinical trial of Polio Vaccine under low resource conditions. A total of 200 children were recruited for the study and randomly assigned to 3 arms. One of the arms was IPV, the second was OPV and the third was no vaccine. ELISPOT assay conducted on 199 samples on day 0 and 194 samples on day 7. A micro modified version of the original ELISPOT assay was adapted for simultaneous detection of ASC secreting IgA and IgG to Polio Virus 1, 2 and 3 (whole virus). The Anti-coagulated blood was collected from children's age 10 to 12 years on day 0 and day 6 after administration of inactivated (IPV) or live-attenuated oral (OPV) poliovirus vaccine. ASCs were enriched using magnetic beads coated with antibodies to α4β7 and HLA-DR/CD19 and detected by a bicolor ELISPOT in a two-step assay in the presence of enzyme (HRP- and AP)-labeled antiglobulin reagents. The assay was undertaken within 6 hours of clinical specimen collection. Regions of specific antibody with blue (IgA) and/or red (IgG) appearance was observed. Scanning of plates was done using automated ELISPOT counter devices (CTL®). The data analysis of the study is completed. This study shows there is a 10 to 100 fold in ASC count following vaccination with IPV. Special thanks to the WHO, Sanofi Pasteur, Panacea Biotec

Biography

Prashant Sharma completed his Masters in biosciences from Bhopal University in 2007. He is working in The International Vaccine Institute (IVI) in Seoul, Korea, which is an international organization devoted to development and introduction of new and improved vaccines for the world's poorest people before joining IVI, he worked in leading biotech companies in India. He was involved in the projects related to development of many viral and bacterial vaccines which include live and Inactivated two-way ,three-way and four way Animal vaccines, and the development of swine flu, Seasonal flu, Universal flu vaccine and candidate chimeric live tetravalent vaccine against Dengue subtypes.

prashant.bio@gmail.com