
Deceptive Imprinting and its role in Understanding Class II Pathogens-host interactions

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Summary:

The list of disease-causing microbial pathogens is significantly longer than the list of microbes currently controlled or eliminated by vaccine development. It appears that current research and development directed at antigen delivery, vectors, presentation, expression systems and cytokine steering approaches although important, have not fully addressed the problem. As such, it stands that selected genetic instability of the pathogen leading to antigenic variation, coupled with non-protective immunodominance stands as one of the major obstacles in vaccine design today. The immune defense system of the host operates by surveying the “antigenic space” through shapes and linear sequences of chemical information. It appears that microbial pathogens have continued the evolution of selecting for and presenting chemical shapes and sequences on their surfaces (epitopes), which are more immunogenic relative to other biochemically conserved structures on the microbes and structurally dissociated in such a way as to tolerate significant sequence modifications (immunodominant non-protective epitopes-IDNPs). These IDNPs may be deeper in our B and T cell repertoire and act to decoy, misdirect and dysregulate the host’s immune system (Deceptive Imprinting). The technology of Immune Dampening/Refocusing maps, identifies and through site-directed mutagenesis techniques selectively immune dampens the IDNP T and B cell epitopes. New vaccines and therapeutic monoclonal antibodies made by this technology are purposely lacking IDNPs which when used as immunogens induce a new type of antibody with different specificity which convey new immunological and biological properties often conveying broader cross-strain neutralizing antibodies and cell-mediated immune responses and protection.