

# The Functional Epitope Mapping of Vaccine

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## Letter to Editor

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Epitopes are either surface or internal located within the continuum of the antigen. They are made up of eight to ten amino acids in peptide epitope, eight to ten sugar units in polysaccharide epitope or a structural equivalent in lipoidal epitopes. Epitopes determine; specificity, valence, immune dominance, and reactivity [1]. The types of the epitopes can be; linear, conformational, topographic and/ or immune dominant. The microbial vaccine epitope mapping can be structural that imply detailed immunochemical analysis to the subunit macromolecules or amino acid sequencing in order to determine the peptidome for a peptide epitope of microbial vaccine origin. Or sugar chain forming the polysaccharide epitope. The structural shared vaccine epitope lead to either unilateral or bilateral in-vitro shared immune reactivity and/or cross-immune protection *in vivo* [1,2]. While, the functional epitope mapping [3] aims at deducing the epitope nature from their own functional pattern [1-3]. Let us taking three bacterial vaccine epitopes in common in our community and may be common all-over the world as BCG, typhoid and Brucella vaccines. BCG vaccine functional epitope mapping covers; Specific normoglobulin, specific cryoglobulin activating epitopes allergenic epitope, granulomatogenic epitope, molecular mimicry epitope, lymphocyte mitogenic and blastogenic epitopes as well as tumor reducing epitopes in the host reactive immune system. Though in compromised host immune system has shown lower levels of functions for the epitopes [4-7]. Typhoid vaccine functional epitope mapping showed specific normoglobulin, specific cryoglobulin inducing epitopes, allergenic, immunoprotective as well as lymphocyte mitogenic and blastogenic epitopes in the host reactive immune system. Though in compromised host immune system the host has shown quantitative decrease of epitope functions [8,9]. Brucella vaccine functional epitope mapping has shown specific cryoglobulin and specific normoglobulin inducing epitopes, allergenic

epitopes, and granulomatogenic epitopes in reactive immune system. While the compromised host immune system has shown quantitative reduction in various epitope functions [10,11]. Cold stay for rather long time period, chronicity and working infection cycle for tuberculosis, typhoid and brucella as well as the habits of intracellular parasitism are the pre-request of cryoglobulin responses [12].

Reduce function of the epitope in immune compromised host can be a reflection to an acquired secondary or primary defects [1,2]. The functions of replicating epitopes [live vaccine, epitope spreading] as compared to non-replicating epitopes [attenuated or dead vaccine], the replicating type has shown higher limits of immune functions. Though, higher immune function may be features to several immune biological functions like intracellular persistence, cross-talk between the replicating epitope and the cells forming the immune system [13]. Herd immunity plots are relative attributes of preimmunity, post-vaccination, and major histocompatibility complex encodements. Three herd fractions are evident within herd as; low, moderate and high responders. The plot shape is mostly of Gaussian distribution or skewed distribution types [14]. Vaccine immune protectivity with in the primed host[s] immune system can be practically explained via; morbidity, mortality and survival records as well as immune conversion rates among vaccinated [13]. At the molecular levels, however, immune protection may a function of epitope-paratope neutralization and / or interaction in-vivo or cellular activity of memory T lymphocyte on second recall of the specific invading pathogen or for a function of cytotoxic T lymphocyte activity [1,2]. Thus it seems that this trend of functional epitope mapping is a qualitative rather than quantitative approach. Though quantitation in some is Possible.

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