Using immunomics to find vaccine antigens for schistosomiasis

Although schistosomiasis or bilharzia kills almost half a million people per year, to date there are only drugs available to treat the disease but not to prevent re-infection. Making the development of a prophylactic vaccine a necessity. This study describes an immunomics approach to the discovery of vaccine antigens. The emerging field of immunomics enables the determination of an "antibody signature" to a pathogen proteome for both resistant and susceptible individuals. In order to do this, the study constructed a protein microarray for the multi-cellular pathogen and probed it with sera from naturally resistant versus susceptible individuals from a high transmission area. Using multi-dimensional cluster analysis, the study showed that resistant individuals mounted a distinct and robust IgG1 antibody signature to a small set of newly discovered and well-characterized surface antigens in contrast to infected individuals. Concluding that this antigen discovery strategy allows for identification of several potentially protective

and safe schistosomiasis vaccine antigens.

Gaze, S. et al. 2014. An Immunomics Approach to Schistosome Antigen Discovery: Antibody Signatures of Naturally Resistant and Chronically Infected Individuals from Endemic Areas. *PLOS*.