

4th Annual Congress on **INFECTIOUS DISEASES**

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5th International Conference on

NEGLECTED TROPICAL & INFECTIOUS DISEASES

August 29-30, 2018 | Boston, USA

Towards the development of a novel vaccine for *Trichuris trichiura*

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Trichuris trichiura (whipworm) is a soil-transmitted helminth parasite that affects around 500 million people worldwide, resulting in disability and poor child development, especially in areas of poor hygiene and sanitation. The ideal vaccine to protect against *T. trichiura* in humans would include protein epitopes that elicit a protective T helper cell type 2 immune response. Herein, we used bioinformatics tools to identify candidate histocompatibility complex class II (MHC-II) molecule T cell epitopes from known *Trichuris muris* proteins selected using inclusion and exclusion criteria. *T. muris* is the murine whipworm that is closely related to the human pathogen making it a relevant model parasite. A number of prediction tools are available for the identification of peptides that bind to MHC II molecules. The lack of standardized methodology and the difficulty of MHC II epitope prediction make the selection of an appropriate prediction tool difficult. This study reports a systematic review to choose the most appropriate tools to predict MHC II epitopes. Subsequently, up to fifteen epitopes were predicted, from the selected *T. muris* proteins and expressed on Hepatitis B core antigen virus-like particles (HBc-Ag). HBc+ T cell epitopes were tested *in vitro* to address whether they activate antigen presenting cells. We also immunized normally susceptible mice with the HBc+ T cell epitopes prior to infection with *T. muris* to test the protective immune response *in vivo*. The predicted epitopes identified using the right combination of immunoinformatics and immunogenicity screening tools have the potential to bring *T. trichiura* to vaccine trial.

Biography

Ayat Zawawi is a PhD student at the University of Manchester. She is a Lecturer at King Abdul-Aziz University in Jeddah, KSA, Faculty of Applied Medical Sciences.

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