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## Identification of highly immunogenic and protective *Leishmania major* antigen that elicits strong T cell recall responses in recovered human patients

Jude E Uzonna  
University of Manitoba, Canada

Despite a plethora of publication on immunology of leishmaniasis, there is still no clinically effective vaccine against the disease. We used reverse immunology and proteomics approaches to identify naturally processed *L. major* peptides presented by MHC II molecules on infected mouse dendritic cells. One of the peptides derived from highly conserved glycosomal phosphoenolpyruvate carboxykinase (PEPCK), induced strong proliferation and IFN- $\gamma$  production by CD4<sup>+</sup> T cells from infected mice. PEPCK is expressed in glycosomes of *L. major* promastigotes and amastigotes and also induced proliferation, IFN- $\gamma$  and granzyme production in PBMCs from infected human patients that healed cutaneous leishmaniasis. Vaccination with PEPCK peptide, DNA or recombinant protein induced strong protective immunity against *L. major* challenge in both the resistant and susceptible mice. Importantly, we generated PEPCK peptide-MHC II tetramer and reliably demonstrate the activation, expansion, effector activity, contraction and stable maintenance of PEPCK-specific CD4<sup>+</sup> T cells in *L. major*-infected mice. Thus, reverse immunology and proteomics-based antigenic peptide identification approach is a potentially rewarding strategy to find new vaccine candidates for infectious pathogens.

### Biography

Jude E Uzonna obtained DVM and PhD in Immunology from the University of Saskatchewan, Canada. After a Postdoctoral fellowship at the University of Pennsylvania, USA, he was recruited to the Department of Immunology, University of Manitoba in 2004. His research program focuses on understanding cellular and molecular mechanisms that regulate the induction, maintenance and loss of protective immunity to protozoan parasites, with a view to exploiting the information gained from these studies for the development of effective vaccines and vaccination strategies against these infections. He is currently an Associate Professor of Immunology and the Leader of Parasite Vaccines Development Research Group.

[Jude.Uzonna@med.umanitoba.ca](mailto:Jude.Uzonna@med.umanitoba.ca)