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## Mechanisms of antigen uptake at mucosal surfaces and the relevance for vaccine design

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Epithelial cells (ECs) overlying the mucosal tissues establish barriers that separate the internal milieu from the outside environment. In the intestinal mucosa large particulate antigens are internalized by M cells overlying Peyer's patches, by dendritic cells, as well as by ECs. Whether the epithelium of the female reproductive tract (FRT), which lacks Peyer's patches and M cells has similar mechanisms for uptake of antigens is not known. The FRT mucosa is a site of entry and transmission of sexually transmitted infections (STI) such as chlamydia, gonorrhea, HIV, syphilis, genital herpes, and human papillomavirus (HPV). In spite of research efforts, the development of mucosal vaccines against STIs has generally been unsuccessful with the lone exception being vaccines against HPV. It is generally thought that the mucosa of the FRT is a poor site for induction of immune responses, although it does contain components of the innate and adaptive immunity. The non-infective vaccine formulations administered without adjuvants fail to induce strong immune responses, possibly because they do not reach the immune cells in the sub-mucosa of the FGT efficiently. Adjuvants used for mucosal immunizations are toxin-based adjuvants, which raise safety concerns. It was found that EC of the FRT can internalize particulate antigens and that administration of particles via the FRT, without the use of adjuvants can induce strong systemic and mucosal immune responses. Understanding the modes of antigen uptake in the FRT, transport to the deeper lymphoid tissues, and ensuing immune responses will aid in developing vaccines to target STIs.

### Biography

Vjollca H Konjufca received a BS degree at the University of Prishtina (Kosova), MS at the University of Georgia, and a PhD at University of Arkansas. She did her Post-doctoral work at Washington University in Saint Louis and Biodesign Institute in Tempe, Arizona. Her research interests include antigen sampling at mucosal surfaces, bacterial pathogenesis, and design of mucosal vaccines. She is an Assistant Professor at the Department of Microbiology, Southern Illinois University in Carbondale, Illinois.

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