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Vaginal Epithelial Model for testing effectiveness of vaccines and microbicides against STIs.

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Abstract

The Center for Disease Control (CDC) estimates an annual incidence of 6.2 million new cases of HPV and 1.6 million new cases of HSV in the USA. Additionally, there are a large number of new cases of chlamydia, trichomoniasis and other sexually transmitted infections (STIs) each year, resulting in nearly 16 billion dollars in medical costs. Females are affected disproportionately more both in terms of numbers and complications of STIs.

Vaccination against some strains of HPV is now available, while research into vaccines and microbicides against other STIs including HIV is on-going. Protection against STIs includes acquired immunity as seen after vaccination, but more importantly, innate immunity by local barrier function of the genital epithelium. Unfortunately the effectiveness of potential vaccines and other agents at the molecular level of the genital mucosa is difficult to study in human subjects.

An ex-vivo culture model has been developed to reflect the human vaginal epithelium. At day 10 of culture, we have a 10-12 layer-thick polarized tissue that histologically as well as by electron microscopy very closely mimics human vaginal epithelium. It is replenishable, consistently reproducible, and supports limited colonization of bacterial flora.

This tissue serves as an excellent platform for evaluating innate (barrier function) as well as acquired (after treatment with vaccine and microbicide formulations) immune function of the human genital mucosa which is the site of entry for STIs.

Biography

Dr. Alwyn Rapose obtained his Doctorate in Dermatology, Venereology and Leprology from King Edward VII Memorial Hospital, Bombay, India. Thereafter he obtained his MD in Internal Medicine from St. Vincent Hospital, Worcester, Massachusetts, USA, followed by a Fellowship in Infectious Diseases at the University of Texas Medical Branch, Galveston, Texas, USA. During this time, he was a recipient of the NIH / NIAID supported UTMB postdoctoral research grant in Emerging and Reemerging Infectious Diseases.

Dr. Rapose is board certified in both Infectious Diseases and Internal Medicine. He is presently Assistant Professor of Clinical Medicine at the University of Massachusetts, USA and practices as consultant in Infectious Diseases at the Reliant Medical Group and St. Vincent Hospital in Worcester, Massachusetts, USA