

## National Institute of Dental and Craniofacial Research

### Examples of Sponsored Basic, Translational and Clinical Research

#### Linking Oral Health with HIV/AIDS

##### **Paper 8: Oral pathology and transmission of HIV**

[J Virol](#). 2012 Mar;86(5):2556-70. Epub 2011 Dec 28.

**Differential transmission of HIV traversing fetal oral/intestinal epithelia and adult oral epithelia.**

[Tugizov SM](#), [Herrera R](#), [Veluppillai P](#), [Greenspan D](#), [Soros V](#), [Greene WC](#), [Levy JA](#), [Palefsky JM](#).

##### *Source*

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##### *Abstract*

While human immunodeficiency virus (HIV) transmission through the adult oral route is rare, mother-to-child transmission (MTCT) through the neonatal/infant oral and/or gastrointestinal route is common. To study the mechanisms of cell-free and cell-associated HIV transmission across adult oral and neonatal/infant oral/intestinal epithelia, we established ex vivo organ tissue model systems of adult and fetal origin. Given the similarity of neonatal and fetal oral epithelia with respect to epithelial stratification and density of HIV-susceptible immune cells, we used fetal oral the epithelium as a model for neonatal/infant oral epithelium. We found that cell-free HIV traversed fetal oral and intestinal epithelia and infected HIV-susceptible CD4(+) T lymphocytes, Langerhans/dendritic cells, and macrophages. To study the penetration of cell-associated virus into fetal oral and intestinal epithelia, HIV-infected macrophages and lymphocytes were added to the surfaces of fetal oral and intestinal epithelia. HIV-infected macrophages, but not lymphocytes, transmigrated across fetal oral epithelia. HIV-infected macrophages and, to a lesser extent, lymphocytes transmigrated across fetal intestinal epithelia. In contrast to the fetal oral/intestinal epithelia, cell-free HIV transmigration through adult oral epithelia was inefficient and virions did not infect intraepithelial and subepithelial HIV-susceptible cells. In addition, HIV-infected macrophages and lymphocytes did not transmigrate through intact adult oral epithelia. Transmigration of cell-free and cell-associated HIV across the fetal oral/intestinal mucosal epithelium may serve as an initial mechanism for HIV MTCT.

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