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Pre-clinical development of drug and vaccines against HIV and Zika virus

My research at the CNPRC uses macaque models of HIV infection to study all aspects of HIV/AIDS and Zika virus pathogenesis and to perform preclinical testing of vaccines and drugs. Twenty years ago, we were the first to demonstrate high efficacy of a then-new HIV compound, called tenofovir, in infected macaques. Our preclinical data provided the scientific foundation for clinical testing in humans. Since its FDA approval in 2001, tenofovir has become the number one HIV drug in the world. It is used to treat millions of HIV-infected people worldwide and is also used increasingly to prevent HIV transmission as part of pre-exposure prophylaxis regimens.

Preclinical research performed in nonhuman primates provides the crucial proof-of-concept and scientific foundation to test new strategies in human clinical trials.

Tackling HIV and AIDS: contributions by non-human primate models.

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Zika Virus Tissue and Blood Compartmentalization in Acute Infection of Rhesus Macaques.

Coffey LL, Pesavento PA, Keesler RI, Singapuri A, Watanabe J, Watanabe R, Yee J, Bliss-Moreau E, Cruzen C, Christe KL, Reader JR, von Morgenland W, Gibbons AM, Allen AM, Linnen J, Gao K, Delwart E, Simmons G, Stone M, Lanteri M, Bakkour S, Busch M, Morrison J, Van Rompay KK. PLoS One. 2017 Jan 31;12(1):e0171148. doi: 10.1371/journal.pone.0171148. eCollection 2017.

Research Leads to Worldwide Health Benefits

Velmurugan and his wife are HIV-infected and live with their two children in an impoverished village in India. In 2010, Velmurugan had terminal AIDS and was at imminent risk of dying when he approached an NGO that is supported by Sahaya International, a Davis-based 501(c)(3) nonprofit organization founded by CNPRC scientist Dr. Koen Van Rompay. The couple gained access to HIV treatment in a hospital in Chennai, where they were provided with HIV drug tablets containing tenofovir, which is now being used increasingly in developing countries. This successful drug is a direct result of the preclinical research performed on tenofovir in nonhuman primates at CNPRC. Thanks to this treatment, Velmurugan and his wife have seen a dramatic improvement in their health in just one year (right photo taken in 2011); they are able to resume work, and the kids have not been orphaned as is so often the case when families are affected by HIV.



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