

Novel technique demonstrates interactions between malaria parasite and HIV

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Here, scientist Guadalupe Andreani prepares cells for culture. Credit: *Journal of Visualized Experiments*

The World Health Organization estimates that in 2011 there were 216 million cases of malaria and 34.2 million people living with HIV. These diseases particularly afflict sub-Saharan Africa, where large incidence of co-infection result in high mortality rates. Yet, in spite of this global pandemic, interactions between the parasite that causes malaria, *Plasmodium falciparum*, and HIV-1 are poorly understood. However, a new video article in *JoVE*, the *Journal of Visualized Experiments*, that describes a novel technique to study the interactions between HIV-1 and *P. falciparum* in cultured human cells, will allow scientists to explore different parameters of co-infection by the two microbes.

The study is led by Dr. David Richard of the Centre Hospitalier Universitaire de Quebec (CHUQ). Dr. Richard explains, "We don't know much about what is happening at the cellular level when HIV-1-infected immune cells encounter the [malaria parasite](#). Results obtained from the few studies exploring the interaction of these two diseases are sometimes conflicting. We hope that our model will allow us to thoroughly dissect these interactions in

a simplified system."

Each disease attacks a different component of human blood, thus disturbing normal immune function. *P. falciparum* infect red blood cells and cause fever, shivering, vomiting, or convulsions in patients. HIV-1 causes acquired immune deficiency syndrome (AIDS) by infecting components of the immune system, including macrophages and helper T cells, and then replicates and destroys the host cells. By studying co-infection at different phases of each disease in vitro, scientists can better understand how different stages of [malaria infection](#) and HIV reproduction affect the onset and severity of the other disease. As such, Dr. Richard and his laboratory present a technique that investigates how *P. falciparum*-infected [red blood cells](#) affect the replication of HIV-1 in monocyte-derived macrophages.

Dr. Richard points out that, "by publishing in *JoVE*, you really see what is happening in the experiment. The visual representation helps succinctly explain a long procedure, and gives you a fuller picture of the schematic complexity." He hopes that this publication will give the scientific community the tools to look at the interactions on a cellular level, which would be an initial step in improving the quality of life for individuals infected by these deadly diseases. "This protocol provides a tool to examine the interactions between *P. falciparum* and HIV," states *JoVE* editor Dr. Charlotte Frank Sage, "Publication of the protocol in *JoVE* will allow researchers around the world to see a detailed demonstration of this system which will help in bringing the technology to their laboratories."

More information: Richard et. al.: www.jove.com/video/4166/an-vit...ium-falciparum-hiv-1

Provided by The Journal of Visualized

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