



Weill Cornell Medicine

Repurposing Atovaquone for Eliminating the Latent HIV Reservoir

Lead Inventor:

R. Brad Jones, Ph.D.

Associate Professor of Microbiology and Immunology,
Microbiology and Immunology, Weill Cornell Medical College

Associate Professor of Immunology in Medicine, Medicine,
Weill Cornell Medical College

Business Development Contact:

Jamie Brisbois

Manager, Business Development and Licensing

(646) 962-7049

jamie.brisbois@cornell.edu

Repurposing Atovaquone for Eliminating the Latent HIV Reservoir

Background & Unmet Need

- Majority of patients with HIV are well-managed on chronic antiretroviral therapy (ART)
- Although ART suppresses HIV replication, it cannot eliminate integrated HIV within infected T cells, which creates a viral reservoir that triggers viral rebound upon treatment cessation
- Latency reversal agents (LRAs) intended to reactivate latent HIV have largely proven ineffective in reducing the viral reservoir despite enabling ART and immune recognition
- Persistence of HIV reservoirs are not only due to latency but also selection for infected cells that are resistant to killing
- **Unmet Need:** Therapy that effectively eliminates persistently infected HIV cells to achieve viral eradication and a functional “cure”

Technology Overview

- **The Technology:** Repurposing of Atovaquone (ATQ) as a treatment strategy for eliminating HIV viral reservoir
- **The Discovery:** HIV-infected CD4+ T-cells that are resistant to cytotoxic T-lymphocytes (CTL) have lower expression of gene-sets defining active metabolism and oxidative stress
- These cells have lower levels of intracellular ROS, making them more susceptible to agents that induce oxidative stress (e.g., ROS inducers)
- ATQ was demonstrated to induce oxidative stress in human CD4+ T cells
- **PoC Data:** ATQ sensitizes infected CD4+ T-cells from multiple donors to CTL-mediated killing, while sparing noninfected cells
- Studies are planned to evaluate the efficacy of ATQ in mouse models using patient-derive xenografts models of HIV infection

Inventors:

R. Brad Jones
Alberto Herrera

Patents:

[PCT Application Filed](#)

Publications:

N/A

Biz Dev Contact:

Jamie Brisbois
(646) 962-7049
jamie.brisbois@cornell.edu

Cornell Reference:

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Technology Applications

- Complements existing ART to clear HIV-positive T cells towards a functional or absolute "cure"
- Alone or in combination with other therapeutic agents, providing a new approach to managing HIV infections

Technology Advantages

- ATQ is an established and well-tolerated drug
- Serves a dual purpose, treating both latent reservoirs and protozoal infections in HIV patients
- Existing manufacturing processes and availability make ATQ a cost-effective option compared to newer, more specialized drugs

Supporting Data / Figures

Infected CD4+ T-cell survival

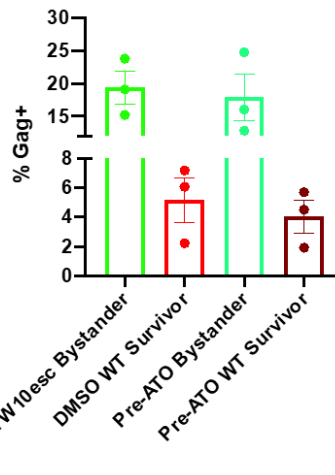


Figure 1: CD4+ T cells infected with wild-type HIV have a lower survival rate when pre-treated with ATQ (pre-ATO WT Survivor) compared to those that weren't (DMSO WT Survivor).

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