

## **Method for Detecting Active and Latent Virally Infected Cells**

Technology #13529

### **Applications**

This technology is a method for detecting latent viral infections in single cells with applications as a research tool or diagnostic.

### **Problem Addressed**

HIV therapeutics have significantly improved the quality of life and lifespan of patients infected with the HIV virus. However, HIV remains a lifelong disease due to latent (inactive) virus that resides in immune cells indefinitely. All current methods of detecting latent virus work on pooled cells. Only a very small fraction of cells in the pool harbors latent virus, therefore, studying the latent cell state has remained challenging. This technology is a method for assaying latent virus in single cells using detection of secreted virus combined with RT-PCR.

### **Technology**

This technology uses micro-engraved wells to isolate single cells and perform single cell RT-PCR. First, cells infected with latent virus are seeded into the micro-wells. Next, a baseline measurement of virus production is measured by inverting the microwells onto a glass slide printed with antibodies against the virus. The cells are then stimulated with a molecule to activate virus production. After stimulation, the virus production is measured a second time and taqman RT-PCR is carried out directly in each well. Wells that begin to produce virus only upon stimulation had a latent viral infection and the RT-PCR results can then be used to assess the viral production and cellular characteristics of these latent virus infected cells. This procedure is rapid, high throughput, and multiplexable at both virus detection and RT-PCR steps

### **Advantages**

- Detection of latent virus in single cells
- Simple, one step RT-PCR on individual cells
- Multiplex RT-PCR using multiple taqman probes

### **Categories For This Invention:**

Life Sciences

Clinical Applications

Immunology

Infectious Disease

Diagnostics

Protein

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Microarray

Research Tools

Protein & Protein Chemistry

RNA

## **Intellectual Property:**

Method for detecting active and latent virally infected cells

Issued US Patent

9,404,924

## **Inventors:**

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## **Publications:**

Massively parallel detection of gene expression using subnanolitre wells

Lab Chip

2010

## **External Links:**

Love Lab

<https://love-lab.mit.edu/>