



Quantitative Comet Assay for Measuring Viral Growth and Resistance to Anti-Viral Compounds

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a sensitive means of measuring viral infectivity and replication activity.

Overview

The standard assay for measuring viral infectivity is a plaque assay in which a semisolid agar applied over cells limits the spread of virus progeny from isolated infected cells to neighboring cells, eventually producing a macroscopic region of dead cells called a plaque. If the agar is replaced by a liquid medium, then virus progeny from infected cells can infect near and distant cells, producing significantly larger plaques that have comet-like shapes.

The Invention

UW-Madison researchers have developed a sensitive means of measuring viral infectivity and replication activity by monitoring flow-induced viral comet formation. A layer of host cells is contacted with a viral sample and cultured in a thin layer of liquid culture medium. Preferably, the host cells are cultured with the virus particles in a microfluidic channel. The liquid medium flows controllably through the channel to enhance the spread of the viral progeny to uninfected host cells. Infected host cells develop an observable indication of viral gene expression, like cell death. The resulting comet-like infections can be digitally imaged and computer-processed for automated quantification of the spread of viral infection.

Applications

- Designing drugs to target specific stages in the viral infection cycle
- Testing anti-viral compounds

Key Benefits

- Enables 10-to-1,000-fold higher sensitivity than conventional bio-assays for the identification and characterization of drug-resistant viruses
- Provides a faster means of extracting more detailed information about viral spread in a host
- More accurately reflects viral replication than monitoring standard plaque size
- Allows assessment of phenotypic and/or genetic diversity of individual virus particles released from a single infected cell
- Amenable to automation and digital imaging, enabling more quantitative measures of infectivity and viral growth
- One embodiment allows multiple candidate anti-viral compounds to be screened simultaneously

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For More Information About the Inventors

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Tech Fields

- [Diagnostics & Biomarkers : Diagnostics](#)
- [Research Tools : Detection](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854

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