Video Article

June 2011: This Month in JoVE

Aaron Kolski-Andreaco¹

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Abstract

Video Link

The video component of this article can be found at <https://www.jove.com/video/3549/>

Protocol

Direct Observation of Phagocytosis and NET-formation by Neutrophils in Infected lungs using 2-photon Microscopy

Mike Hasenberg¹, Anja Köhler¹, Susanne Bonifatius¹, Andreas Jeron², Matthias Gunzer¹

¹Institute for Molecular and Clinical Immunology, Otto-von-Guericke University Magdeburg, ²Department of Immunoregulation, Helmholtz Center for Infection Research

We show, how to use 2-photon microscopy for the observation of the dynamics of neutrophil granulocytes in infected lungs while they phagocytose pathogens or produce neutrophil extracellular traps (NETs)

A System for Culturing Iris Pigment Epithelial cells to Study Lens Regeneration in Newt

Rital B. Bhavsar^{1,*}, Kenta Nakamura^{1,*}, Panagiotis A. Tsonis^{1,2}

¹Department of Biology, University of Dayton, ²Center for Tissue Regeneration and Engineering, University of Dayton

* These authors contributed equally

In newt, the lens regenerates always from the dorsal iris by transdifferentiation of the iris pigmented epithelial cells (IPEs). Here we describe a procedure to culture dorsal and ventral newt IPE cells and their implantation to the newt eye. The implanted cells are then studied by tissue sectioning and immunohistochemistry.

Insulin Injection and Hemolymph Extraction to Measure Insulin Sensitivity in Adult *Drosophila melanogaster*

Aaron T. Haselton¹, Yih-Woei C. Fridell²

¹Department of Biology, State University of New York, ²Allied Health Sciences, University of Connecticut

Conserved insulin signaling pathways found in the fruit fly *Drosophila melanogaster* make this organism a potential tool for modeling metabolic disorders including type II diabetes. To this end, it is critical to establish physiological assays to effectively measure systemic insulin action in peripheral glucose disposal in the adult fly.

Methods to assess beta cell death mediated by cytotoxic T lymphocytes

Jing Chen, Scott Grieshaber, Clayton E. Mathews

Departments of Pathology, Immunology and Laboratory Medicine, College of Medicine, University of Florida

Cell-mediated lymphocytotoxicity (CML) assays can be used to test autoreactive responses and study mechanisms of cell death in vitro. However, using live-cell confocal microscopic imaging techniques with fluorescent dyes, the type and kinetics of cell death as well as the pathways utilized can be studied in greater detail.

Investigating Social Cognition in Infants and Adults Using Dense Array Electroencephalography (dEEG)

David W. Haley, Adekemi J. Akano, Joanna Dudek

Department of Psychology, University Toronto Scarborough

Dense array electroencephalography is being used increasingly to study social cognitive functions in infants and adults. Here we present an established methodology that represents a significant improvement on conventional methodologies for studying EEG in infants and adults.

Evaluation of Nanoparticle Uptake in Tumors in Real Time Using Intravital Imaging

Choi-Fong Cho¹, Amber Ablack², Hon-Sing Leong², Andries Zijlstra³, John Lewis^{2,4}

¹Department of Medical Biophysics, University of Western Ontario, ²London Regional Cancer Program, London Health Science Centre,

³Department of Pathology, Vanderbilt University, ⁴Translational Prostate Cancer Research Group, London Health Science Centre

We present a novel approach to quantify nanoparticle localization in the vasculature of human xenografted tumors using dynamic, real-time intravital imaging in an avian embryo model.

Detection of Infectious Virus from Field-collected Mosquitoes by Vero Cell Culture Assay

Philip M. Armstrong, Theodore G. Andreadis, Shannon L. Finan, John J. Shepard, Michael C. Thomas

The Connecticut Agricultural Experiment Station, Center for Vector Biology and Zoonotic Diseases, Department of Environmental Sciences

We describe a method to process and screen field-collected mosquitoes for a diversity of viruses by Vero cell culture assay. By employing this technique, we have detected 9 different viruses from 4 taxonomic families in mosquitoes collected in Connecticut.

Plasma Lithography Surface Patterning for Creation of Cell Networks

Michael Junkin¹, Siu Ling Leung¹, Yongliang Yang¹, Yi Lu¹, Justin Volmering¹, Pak Kin Wong^{1,2}

¹Aerospace and Mechanical Engineering, University of Arizona, ²Biomedical Engineering IDP and BIO5 Institute, University of Arizona

A versatile plasma lithography technique has been developed to generate stable surface patterns for guiding cellular attachment. This technique can be applied to create cell networks including those that mimic natural tissues and has been used for studying several, distinct cell types.