

Video Article

July 2011: This Month in JoVE

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Abstract

Video Link

The video component of this article can be found at <https://www.jove.com/video/3688/>

Protocol

Ex vivo Imaging of T Cells in Murine Lymph Node Slices with Widefield and Confocal Microscopes

Hélène Salmon^{1,2}, Ana Rivas-Caicedo^{1,2}, François Asperti-Boursin^{1,2}, Camille Lebugle^{1,2}, Pierre Bourdoncle^{1,2}, Emmanuel Donnadieu^{1,2}

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This protocol describes a method to image fluorescent T cells introduced into lymph node slices. The technique permits real-time analyses of T cell migration with traditional widefield fluorescence or confocal microscopes.

Focussed Ion Beam Milling and Scanning Electron Microscopy of Brain Tissue

Graham Knott, Stéphanie Rosset, Marco Cantoni

Centre of interdisciplinary electron microscopy, École Polytechnique Fédérale de Lausanne

This abstract describes how resin embedded brain tissue can be prepared and imaged in the three dimensions in the focussed ion beam, scanning electron microscope.

High-Resolution Endocardial and Epicardial Optical Mapping in a Sheep Model of Stretch-Induced Atrial Fibrillation

David Filgueiras-Rama, Raphael Pedro Martins, Steven R. Ennis, Sergey Mironov, Jiang Jiang, Masatoshi Yamazaki, Jérôme Kalifa, José Jalife, Omer Berenfeld

Center for Arrhythmia Research. Internal Medicine, University of Michigan

This report provides a detailed description of the methodology and results of simultaneous endocardial and epicardial optical mapping of electrical excitation in the intact left atrium of a Langendorff-perfused sheep heart during stretch-induced atrial fibrillation.

An Optimized Protocol for Rearing *Fopius arisanus*, a Parasitoid of Tephritid Fruit Flies

Nicholas Manoukis, Scott Geib, Danny Seo, Michael McKenney, Roger Vargas, Eric Jang

Agricultural Research Service, US Dept. of Agriculture, US Pacific Basin Agricultural Research Center

Fopius arisanus is an egg-larval parasitoid of Tephritid fruit flies that is successfully used in biological control of these important tropical pests. We describe here an optimized protocol for rearing *F. arisanus* on a small scale using readily available materials.

Shape Memory Polymers for Active Cell Culture

Kevin A. Davis, Xiaofan Luo, Patrick T. Mather, James H. Henderson

Department of Biomedical and Chemical Engineering, Syracuse Biomaterials Institute

A method for developing cell culture substrates with the ability to change topography during culture is described. The method makes use of smart materials known as shape memory polymers that have the ability to memorize a permanent shape. This concept is adaptable to a wide range of materials and applications.

Investigating Outer Hair Cell Motility with a Combination of External Alternating Electrical Field Stimulation and High-speed Image Analysis

Rei Kitani, Federico Kalinec

Division of Cell Biology and Genetics, House Ear Institute

A reliable method to investigate outer hair cell (OHC) motile responses, including electromotility, slow motility and bending, is described. OHC motility is elicited by stimulation with an external alternating electrical field, and the method takes advantage of high-speed image recording, LED-based illumination, and last generation image analysis software.

Measurement of Aggregate Cohesion by Tissue Surface Tensiometry

Christine M. Butler, Ramsey A. Foty

Department of Surgery, UMDNJ-Robert Wood Johnson Medical School

We describe a method of measuring binding energy, expressible as tissue surface tension, between cells within 3D tissue-like aggregates. Differences in tissue surface tension have been demonstrated to correlate with invasiveness of lung, muscle, and brain tumors, and are fundamental determinants of establishing spatial relationships between different cell types.

Quantitative Autonomic Testing

Peter Novak

Department of Neurology, University of Massachusetts Medical School

Standardized, comprehensive and fully quantitative testing of autonomic functions is described. The autonomic tests consist of evaluation of all three major autonomic domains including cardiovagal, adrenergic and sudomotor. The severity and distribution of dysautonomia is quantitated using Composite Autonomic Severity Scores.

Morris Water Maze Test for Learning and Memory Deficits in Alzheimer's Disease Model Mice

Kelley Bromley-Brits*, Yu Deng*, Weihong Song

Department of Psychiatry, Brain Research Center, University of British Columbia

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The Morris Water Maze is a behavioral task to test hippocampal-dependent learning and memory. It has been widely used in the study of neurobiology, neuropharmacology and neurocognitive disorders in rodent models.