Video Article

May 2011: This Month in JoVE

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[1]

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Abstract

Video Link

The video component of this article can be found at https://www.jove.com/video/3449/

Protocol

Protocol for Recombinant RBD-based SARS Vaccines: Protein Preparation, Animal Vaccination and Neutralization Detection

Lanying Du, Xiujuan Zhang, Jixiang Liu, Shibo Jiang
Lindsley F. Kimball Research Institute, New York Blood Center

This protocol describes a general procedure for studying recombinant receptor-binding domain (RBD)-based subunit vaccines against SARS. It includes methods for transfection and expression of RBD protein in 293T cells, immunization of mice with RBD and detection of neutralization activity of mouse sera using an established SARS pseudovirus neutralization assay.

Quantitative Visualization and Detection of Skin Cancer Using Dynamic Thermal Imaging

Cila Herman, Muge Pirtini Cetingul
Department of Mechanical Engineering, The Johns Hopkins University

We demonstrated that malignant pigmented lesions with increased metabolic activity generate quantifiable amounts of heat and the measurement of the transient thermal response of the skin to a cooling excitation allows quantitative identification of melanoma and other skin cancers (vs. non-proliferative nevi) at an early stage of the disease.

GUS Based Cell Death Assay

Mehdi Kabbage, Maria Ek-Ramos, Martin Dickman

Programmed cell death assays commonly used in mammalian systems such as DNA laddering or TUNEL assays, are often difficult to reproduce in plants. In combination with a GUS reporter system, we propose a rapid, plant based transient assay to analyze the potential death properties of specific genes.

Isolation of *Drosophila melanogaster* Testes

Phillip D. Zamore, Shengmei Ma
Department of Biochemistry & Molecular Pharmacology and Howard Hughes Medical Institute, University of Massachusetts Medical School

Drosophila melanogaster testes can be rapidly and efficiently isolated from adult males using dissecting needles. With practice, one can readily isolate in one or two days an amount of testes sufficient for the analysis of DNA or RNA by high throughput sequencing or more traditional molecular biology methods or of protein for antibody- or enzyme-based assays.

Seven Steps to Stellate Cells

Patrick Maschmeyer, Melanie Flach, Florian Winau
Immune Disease Institute, Program in Cellular and Molecular Medicine at Children's Hospital, Department of Pathology, Harvard Medical School

Here we describe a method for the isolation of hepatic stellate cells from mouse liver. For stellate cell purification, mouse livers are digested *in situ* and *in vitro* by pronase-collagenase treatment prior to density gradient centrifugation. This technique yields highly pure hepatic stellate cells.

A Protocol for Collecting and Staining Hemocytes from the Yellow Fever Mosquito *Aedes aegypti*

Amina A. Qayum, Aparna Telang

Department of Biology, University of Richmond

A simplified yet accurate method to collect and stain mosquito hemocytes is described. Our method combines the simplicity of perfusion with the accuracy of high injection techniques to isolate clean preparations of hemocytes in Aedes mosquitoes. This method facilitates studies requiring knowledge of the types of hemocytes and their abundance.

Parabolic Flight Protocol

Vera Brümmer[1], Stefan Schneider[1], Heiko Strüder[1], Heather Carnahan[2], Chris D. Askew[3]
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The effect of weightlessness and hypergravity on both hemodynamic and electrophysiological processes in the brain is going to be followed during parabolic flight by EEG and NIRS techniques. A feasibility study of a more complex experiment, which is planned to carry out during medium- and long-term space flight.

Generation of Neural Stem Cells from Discarded Human Fetal Cortical Tissue

Jie Lu[1], Laurent C. Delli-Bovi[2], Jonathan Hecht[3], Rebecca Folkerth[4], Volney L. Sheen[1]
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A simple and reliable method on isolation and culture of neural stem cells from discarded human fetal cortical tissue is described. Cultures derived from known human neurological disorders can be used for characterization of pathological cellular and molecular processes, as well as provide a platform to assess pharmacological efficacy.

