

Video Article

April 2013: This Month in JoVEWendy Chao¹, Aaron Kolski-Andreaco²¹Department of Ophthalmology, Massachusetts Eye and Ear²JoVE Content ProductionCorrespondence to: Aaron Kolski-Andreaco at aaron.kolski-andreaco@jove.comURL: <https://www.jove.com/video/5075>DOI: [doi:10.3791/5075](https://doi.org/10.3791/5075)

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Here's a look at what's coming up in the April 2013 issue of Journal of Visualized Experiments (JoVE).

It's usually not permissible to have food in research laboratories because of contamination issues and potentially dangerous consequences. However, this month, JoVE features a video-article that involves cooking steak in the lab. [Whitesell et al.](#) present a method for measuring the tenderness of cooked beef, which is a significant concern in the beef industry. Because the angle of the steak fibers can affect shear force, the authors use a variable angle cutting box, which allows them to cut the beef so the slice is parallel to the muscle fibers. This allows accurate measurements of the maximal force required to cut a steak.

In another article, we move from beef to human skin samples, such as those left over from facelift procedures. Hair follicles contain many different types of stem cells, so [Yang and Xu](#) demonstrate how to extract the hair follicles from skin samples and isolate neural crest stem cells (NCSCs) using fluorescence-activated cell sorting (FACS). The authors then demonstrate how to culture the NCSCs, which can potentially be used in regenerative medicine.

In JoVE Clinical and Translational Medicine, we have another article involving human skin samples. Described by [Dauch et al.](#), this procedure uses immunohistochemistry on human skin biopsies to study intraepidermal nerve fibers in painful neuropathy. The three-dimensional imaging allows the visualization of morphological changes (such as axonal swellings) associated with neuropathies. This allows physicians to accurately diagnose small fiber neuropathies from skin punch biopsies.

Finally, in the Bioengineering section, we have another novel microscopy technique from the Ozcan group at UCLA, who have already published three articles in JoVE. Their most recent article, from August 2012, demonstrated the use of a lens-free system to image white blood cells on a microfluidic chip (see [Isikman et al. 2012](#)). In the group's fourth JoVE article, [Zhu and Ozcan](#) demonstrate how to attach an opto-fluidic wide-field fluorescent microscope to any cell phone camera. Liquid samples are delivered via a microfluidic channel, and the cell phone camera can be used to record a video of the cells flowing through the channel. This procedure allows fluorescently labeled cells to be imaged and characterized with a compact and cost-effective cell phone camera, which could be very useful for point-of-care or field diagnoses.

You've just had a preview of some of JoVE's highlights for the month of April. Visit the website to see the full-length articles, plus many more, in JoVE: The Journal of Visualized Experiments.

Video Link

The video component of this article can be found at <https://www.jove.com/video/5075/>

Protocol**Introducing an Angle Adjustable Cutting Box for Analyzing Slice Shear Force in Meat**

Tom Whitesell¹, Carmen Avilés², Jennifer L. Aalhus¹, Chris R. Calkins³, Ivy L. Larsen¹, Manuel Juárez¹

Slice shear force is a reference method for beef texture analysis. Using an angle adjustable cutting box could increase its accuracy for research purposes. The results from different locations within the *longissimus* muscle show a high correlation with Warner-Bratzler shear force methodology and high potential adaptability for different muscles.

Three-dimensional Imaging of Nociceptive Intraepidermal Nerve Fibers in Human Skin Biopsies

Jacqueline Dauch¹, Chelsea Lindblad¹, John M. Hayes¹, Stephen I. Lentz², Hsinlin T. Cheng¹

In order to study the changes of nociceptive intraepidermal nerve fibers (IENFs) in painful neuropathies (PN), we developed protocols that could directly examine three-dimensional morphological changes observed in nociceptive IENFs. Three-dimensional analysis of IENFs has the potential to evaluate the morphological changes of IENF in PN.

Wide-field Fluorescent Microscopy and Fluorescent Imaging Flow Cytometry on a Cell-phone

Hongying Zhu¹, Aydogan Ozcan^{1,2,3}

We review our recent results on the integration of fluorescent microscopy and imaging flow cytometry tools on a cell-phone using compact and cost-effective opto-fluidic attachments. These cell-phone based micro-analysis devices might be useful for cytometric analysis, such as performing various cell counting tasks as well as for high-throughput screening of e.g., water samples in resource limited settings.

Isolation and Culture of Neural Crest Stem Cells from Human Hair Follicles

Ruifeng Yang, Xiaowei Xu

This article presents a robust protocol for isolation and culture of neural crest stem cells from human hair follicles.

Disclosures

No conflicts of interest declared.