

Video Article

August 2013: This Month in JoVE

Wendy Chao¹, Aaron Kolski-Andreaco²

¹Department of Ophthalmology, Massachusetts Eye and Ear

²JoVE Content Production

Correspondence to: Aaron Kolski-Andreaco at aaron.kolski-andreaco@jove.com

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Abstract

Here's a look at what's coming up in the [August 2013 issue](#) of JoVE: The Journal of Visualized Experiments.

Honey is an age-old anti-aging product; according to legend, Cleopatra, the Queen of the Nile, bathed in honey to preserve her ageless beauty. But did you know that honeybees themselves might hold the secret to slowing or even reversing aging? The honeybee is an established model for studying how social and environmental factors can affect the aging process. Nurse bees, which stay in the hive to tend the growing larvae, age more slowly than forager bees, which venture out to collect nectar and pollen. [Münch et al.](#) expand classical experimental paradigms with three new techniques for studying aging in honeybees: distinguishing chronological aging from work-induced senescence, reverting forager bees into nurse bees by taking them to a new hive, and quantifying aging by measuring lipofuscin (a known biomarker of cellular senescence).

It smells like smoke over in the [JoVE Behavior](#) section, where we feature a method for studying the brain's response to cigarette smoking. [Morris et al.](#) use positron emission tomography (PET) to non-invasively image the dopaminergic system during smoking. They also make dopamine movies to illustrate how smoking causes dopamine levels to fluctuate in the striatal area of the brain. Because the rise and fall of striatal dopamine levels contribute to addiction and withdrawal, this is a powerful technique for studying the addictive effects of smoking.

In [JoVE Applied Physics](#), we feature an article in the field of microwave photonics, which studies the interaction between microwaves and optical waves. [Coillet et al.](#) build microwave photonics systems based on whispering gallery modes (WGMs), which are waves that can travel around a concave surface. To make the resonator, Coillet et al. grind down a commercially available crystalline optical window, polish it with extremely fine particles, and verify its smoothness using interferometric measurements. Then, they draw a fiber taper, which couples light in the resonator. Finally, they show how to excite a WGM. This is a promising technology with many potential applications in aerospace, telecommunications, and other areas.

In [JoVE Bioengineering](#), [Moll et al.](#) build upon classic two-dimensional cell culture with an engineered three-dimensional tumor test system. In this biological vascularized scaffold, a metal insert containing decellularized small intestinal submucosa serves as a scaffold for culturing cancer cells or other cell types. These can be grown statically or as a dynamic culture in a flow bioreactor, which exposes cells to shear stress. This allows a lifelike model for studying tumor development and potential treatments.

You've just had a sneak peek of a few highlights from the [August 2013 issue](#) of JoVE. 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/5108/>

Protocol

Microwave Photonics Systems Based on Whispering-gallery-mode Resonators

Aurélien Coillet, Rémi Henriët, Kien Phan Huy, Maxime Jacquot, Luca Furfaro, Irina Balakireva, Laurent Larger, Yanne K. Chembo

Optics Department, **FEMTO-ST Institute**

The customized techniques developed in our lab to build microwave photonics systems based on ultra-high Q whispering gallery mode resonators are presented. The protocols to obtain and characterize these resonators are detailed, and an explanation of some of their applications in microwave photonics is given.

Tissue Engineering of a Human 3D *In vitro* Tumor Test System

Corinna Moll*, Jenny Reboredo*, Thomas Schwarz, Antje Appelt, Sebastian Schürlein, Heike Walles, Sarah Nietzer

Department of Tissue Engineering and Regenerative Medicine, **University Hospital Würzburg**

Methods to create human 3D tumor tissues as test systems are described. These technologies are based on a decellularized Biological Vascularized Scaffold (BioVaSc), primary human cells and a tumor cell line, which can be cultured under static as well as under dynamic conditions in a flow bioreactor.

An Effective Manual Deboning Method To Prepare Intact Mouse Nasal Tissue With Preserved Anatomical Organization

David Dunston, Sarah Ashby*, Kurt Krosnowski*, Tatsuya Ogura, Weihong Lin

Biological Sciences, **University of Maryland Baltimore County**

Obtaining Specimens with Slowed, Accelerated and Reversed Aging in the Honey Bee Model

Daniel Münch¹, Nicholas Baker², Erik M.K. Rasmussen¹, Ashish K. Shah¹, Claus D. Kreibich¹, Lars E. Heidem¹, Gro V. Amdam^{1,2}

¹Department of Chemistry, Biotechnology and Food Science, **Norwegian University of Life Sciences**, ²School of Life Sciences, **Arizona State University**

In honey bee workers, aging depends on social behaviors rather than on chronological age. Here we show how worker-types with very different aging patterns can be obtained and analyzed for cellular senescence.

Disclosures

No conflicts of interest declared.