

Video Article

April 2017- This Month in JoVE: Honeybees and Pesticides, Hydrogel Membranes for Water Purification, Language and Cognition in Infants, and Live Imaging of Developing Arabidopsis Flowers

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Abstract

Here's a look at what's coming up in the April 2017 issue of [JoVE: The World's Premier Video Journal](#)

The plight of the honeybee holds our first spotlight this month. Pesticides brought back to colonies by workers foraging on contaminated flowers can be spread throughout honeybee colonies, severely impacting health of larvae and adults, and potentially causing colony collapse. In [JoVE Environment](#), our Authors describe feeding methods in which an insect growth regulator and commonly used pesticide - PPN - is fed both to individual honeybees and an entire colony, in a manner that can be applied to any potentially harmful chemicals or pathogens. A technique enabling a better understanding of the challenges facing these critical pollinators leaves us buzzing.

From food-producing pollinators to clean water...in [JoVE Bioengineering](#) this month, our Authors present methods to prepare low-cost, efficient membranes for water purification. Here, zwitterionic hydrogels are produced using SBMA* crosslinked to polyethylene glycol diacrylate to improve mechanical strength. When impregnated into a highly porous hydrophobic support, the resultant tightly bound layers prevent antifouling of the membranes by physically preventing attachment to the surface. These properties combined allow for production of energy efficient and long lasting filters to meet increasing demand for clean water. Something we can all toast to, cheers!

In [JoVE Behavior](#), our Authors demonstrate a procedure of exposure manipulation involving sorting novel and familiar objects paired with an acoustic signal, to reveal the powerful shaping role of experience in recognizing human language. At 3-4 months infants broadly recognize both human and nonhuman primate vocalizations as cues to support object categorization, but by 6-to 7-months only human vocalizations are utilized. This method shows that merely exposing infants to nonhuman primate vocalizations can preserve this early-established link, whereas the same effect is not observed when the child is exposed to backwards speech.

Finally, as the first buds of spring emerge, our last video highlight this month gives a fascinating glimpse into the private life of plants. In [JoVE Developmental Biology](#), our Author uses confocal microscopy to show how the intricate inflorescences of the Arabidopsis plant develop in real time. Moreover, the demonstrated procedure allows expression of multiple genes to be visualized at once, aiding in the elucidation of the complex genetic networks, which unravel simultaneously to specify the identities of the different floral organs. Blooming marvelous!

You've just had a sneak peek of the April 2017 issue of [JoVE](#). Visit the website to see the full-length articles, plus many more, in JoVE: The World's Premier Video Journal.

Video Link

The video component of this article can be found at <https://www.jove.com/video/5834/>

Protocol

Experience is Instrumental in Tuning a Link Between Language and Cognition: Evidence from 6- to 7- Month-Old Infants' Object Categorization

Danielle Perszyk, Sandra Waxman

Psychology Department, **Northwestern University**

At 3-4 months, listening to human and nonhuman primate vocalizations boosts infants' cognition; by 6 months, only human vocalizations exert this cognitive advantage. We describe an exposure manipulation that reveals the powerful shaping role of experience as infants specify which sounds to link to cognition and which to tune out.

Live Confocal Imaging of Developing Arabidopsis Flowers

Nathanaël Prunet

Department of Biology and Biological Engineering, **California Institute of Technology**

Live confocal imaging provides biologists with a powerful tool to study development. Here, we present a detailed protocol for the live confocal imaging of developing *Arabidopsis* flowers.

Evaluating the Effect of Environmental Chemicals on Honey Bee Development from the Individual to Colony Level

Chong-Yu Ko, Yue-Wen Chen, Yu-Shin Nai

Department of Biotechnology and Animal Science, **National Ilan University**

Herein we present a method to feed pesticide contaminated food to both an individual honey bee and a beehive colony. The procedure evaluates the pesticide effect on individual honey bees by *in vivo* feeding of basic larval diet and also on the natural condition of beehive colony.

Synthesis of Hydrogels with Antifouling Properties As Membranes for Water Purification

Thien N. Tran, Sankara N. Ramanan, Haiqing Lin

Department of Chemical and Biological Engineering, University at Buffalo, **The State University of New York at Buffalo**

This paper reports practical methods to prepare hydrogels in freestanding films and impregnated membranes and to characterize their physical properties, including water transport properties.

Disclosures

No conflicts of interest declared.