

Video Article

# July 2016: This Month in JoVE

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## Abstract

Here's a look at what's coming up in the [July 2016 issue](#) of [JoVE: The Journal of Visualized Experiments](#).

In [JoVE Neuroscience](#), gustatory perception - or taste - is an important factor for pollinating insects and the flowers that they feed from. Most studies have used restrained honeybees to study gustatory responses towards nutrients and toxins. This month, [Ma et al.](#) present a new behavioral assay that uses freely moving bumblebees to measure how different compounds influence their feeding behavior. This assay will be useful to pollination biologists, toxicologists, and neuroethologists studying the bumblebee's taste system.

In [JoVE Environment](#), trace metal measurements in natural waters are often inaccurate due to inadequate sampling and analytical techniques. In fact, using improved techniques, researchers are finding that true concentrations of dissolved trace metals may be orders of magnitude lower than previously thought. So [Jiann et al.](#) present a protocol for clean sampling and trace metal analysis of river and estuary waters. They present techniques for reducing contamination throughout all phases of trace metal analysis. The improved data quality allows accurate assessment of trace metals and their relationships to environmental parameters.

In [JoVE Engineering](#), Janus colloids are special nanoparticles that have multiple chemical, physical, and structural properties - making them attractive tools for biomedical applications. [Campbell et al.](#) present a method to prepare catalytically active Janus colloids that "swim" in fluids, and determine their 3D motion using fluorescence microscopy. With this method, 3D trajectories are obtained for the swimming colloid, which allows accurate measurement of swimming velocity and other physical phenomena.

In [JoVE Behavior](#), vision problems can have a major impact on development. But in young children or those with intellectual disabilities, it is often difficult quantitatively assess visual problems, which limits accurate diagnostics. To overcome these problems, [Kooiker et al.](#) describe a method for quantifying visual information processing. A remote eye tracker measures eye movements in response to different visual stimuli - providing valuable information for vision assessment and rehabilitation.

You've just had a sneak peek of the [July 2016 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/5802/>

## Protocol

### A Novel Behavioral Assay to Investigate Gustatory Responses of Individual, Freely-moving Bumble Bees (*Bombus terrestris*)

Carolyn Ma, Sébastien Kessler, Alexander Simpson, Geraldine A. Wright

Institute of Neuroscience, **Newcastle University**

A novel behavioral assay is described for investigating the short term gustatory responses of the mouthparts of freely-moving bumble bees (*Bombus terrestris*) toward nutrients and toxins in solution.

### Clean Sampling and Analysis of River and Estuarine Waters for Trace Metal Studies

Kuo-Tung Jiann<sup>\*1</sup>, Liang-Saw Wen<sup>\*2,3</sup>, Peter H. Santschi<sup>4</sup>

<sup>1</sup>Department of Oceanography, **National Sun Yat-sen University**, <sup>2</sup>Institute of Oceanography, **National Taiwan University**, <sup>3</sup>Taiwan Ocean Research Institute, **National Research Laboratories**, <sup>4</sup>Department of Oceanography and Marine Sciences, **Texas A&M University at Galveston**

Special care using "clean techniques" is required to properly collect and process water samples for trace metal studies in aquatic environments. A protocol for sampling, processing, and analytical procedures with the aim of obtaining reliable environmental monitoring data and results with high sensitivity for detailed trace metal studies is presented.

## Preparation and 3D Tracking of Catalytic Swimming Devices

Andrew Campbell, Richard Archer, Stephen Ebbens

Department of Chemical and Biological Engineering, **University of Sheffield**

A method to prepare catalytically active Janus colloids that can "swim" in fluids and determine their 3D trajectories is presented.

## A Method to Quantify Visual Information Processing in Children Using Eye Tracking

Marlou J.G. Kooiker<sup>1</sup>, Johan J.M. Pel<sup>1</sup>, Sanny P. van der Steen-Kant<sup>2</sup>, Johannes van der Steen<sup>1,2</sup>

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A method is described to quantify the quality of visual information processing based on reflexive eye movements in response to specific visual modalities. Reaction times and fixation output parameters are used to characterize visual performance in children with and without visual impairments from 6 months of age.

## Disclosures

No conflicts of interest declared.