



# BIOSPHERE

## The Weekly Bulletin of Biology

### Black Friday: No Colloquium

#### New Publications

*Biological Invasions* has published a paper by Dr. **Casey terHorst**, "Genetic variation in invasive species response to direct and indirect interactions."

*Journal of Drugs in Dermatology* has published a paper by Dr. **Gilberto Flores** and coauthors, "Microbiome of affected and unaffected skin of patients with atopic dermatitis before and after emollient treatment."

**Toni Uhlendorf** and Dr. **Randy Cohen** coauthored a paper in *Journal of Applied Physiology*, "Muscle specific changes in length-force characteristics of the calf muscles in the *spastic* Han-Wistar rat."

#### Systematics Courses Added

In an effort to help more students graduate, two systematics courses have been added to our spring offerings.

- BIOL 312/L/392F Vertebrate Biology, includes one weekend fieldtrip.
- BIOL 409/L/492J Nonflowering Plants, includes a Spring Break fieldtrip.

#### Biology Leads in Tech Teaching

Biology had a greater place than any other department at CSUN's Faculty Technology Showcase. Dr. **Mary-Pat Stein** was the Master of Ceremonies,

Drs. **Jeanne Robertson** and **Cheryl van Buskirk** starred in the show, and Dr. **Paul Wilson** was the understudy general.

The group shared diverse ways of engaging, teaching, and assessing students in the classroom with technological wizardry delivered primarily via iPads.

#### Funding to Teach Teachers

The San Fernando Valley Science Project, headed by Dr. **Gini Vandergon**, received \$74,000 this year to continue in-service work for LAUSD teachers.

The CSUN team includes faculty in biology, chemistry, geology, physics, and science education.

This past summer's activities emphasized how to have students analyze data collected in their labs and how to form claims based on evidence. This strong theme is woven throughout the new California science standards.

Lessons to strengthen teachers' content knowledge and technology use were components of the summer institutes. All teachers participated in a clinical setting in which they taught middle school students what they were learning from the CSUN faculty.

## Summers in Poland

Dr. **Michael Summers** attended a symposium in Pultusk, Poland: *The biology of plastids—towards a blueprint for synthetic organelles*. He presented work from his lab, “Characterization of cyanobacterial lipid droplets.”

## My Summer at the Harvard Stem Cell Institute

—Caroline Arellano-Garcia

I spent this past summer conducting research at Brigham and Women’s Hospital through the Harvard Stem Cell Institute Internship Program (HSCI). The lab I was in studies breast cancer. The majority of my efforts focused on the systemic interactions between cancer stem cells (CSCs) and non-cancer stem cells (non-CSCs). Specifically, I studied the effects of varying cytokines secreted from non-CSCs on the formation of tumors composed of differentiated CSCs using in an *in-vitro* model. I was working with a CSC line that forms tumorspheres when it is in a particular state, a state in which it expresses low Zeb1 (a transcription factor) and high levels of e-cadherin (an adhesion protein).

At the end of 10 weeks of thrilling work, we concluded that the secretion of one particular cytokine (Il-1b) by non-CSCs inhibits undifferentiated CSCs from differentiating and giving rise to tumorspheres *in vitro* and vigorously proliferating tumors *in vivo*. These findings will allow cancer researchers to understand the systemic interaction between non-CSCs and disseminated CSCs. This research might ultimately aid in the identification of new targets in

cancer therapies. I spoke on my findings and presented a poster to the faculty of Brigham and Women’s Hospital as well as the HSCI faculty.

My summer research experience was not all bench work. I had the incredible opportunity of meeting the discoverer of the first human oncogene, Dr. Robert Weinberg, during the Weinberg summer lab picnic. I also had the pleasure of meeting a variety of top contributors to the field of stem cell research through a companion course I attended on stem cells and their use in biomedical research at Harvard. In my spare time, I attended seminars at the Broad Institute of MIT and Harvard, as well as visited the McAllister Lab’s collaborators at the Whitehead Institute for Biomedical Research.

My summer was a raw, challenging, rewarding, and fulfilling learning experience. I am using several of the skills I learned over the summer, such as protocols in cell and tissue culture, in the classes that I am taking this semester. I am also applying these skills to the research I am conducting at CSUN. The converse is also true: I used many of the skills I learned at CSUN during my summer research, such as RNA extraction, PCR, and qPCR.

This summer research experience would not have been possible without the mentorship of Drs. **MariaElena Zavala** and **Jonathan Kelber**.

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Department of Biology

California State University, Northridge

Editors: Paul Wilson and Robert Espinoza

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