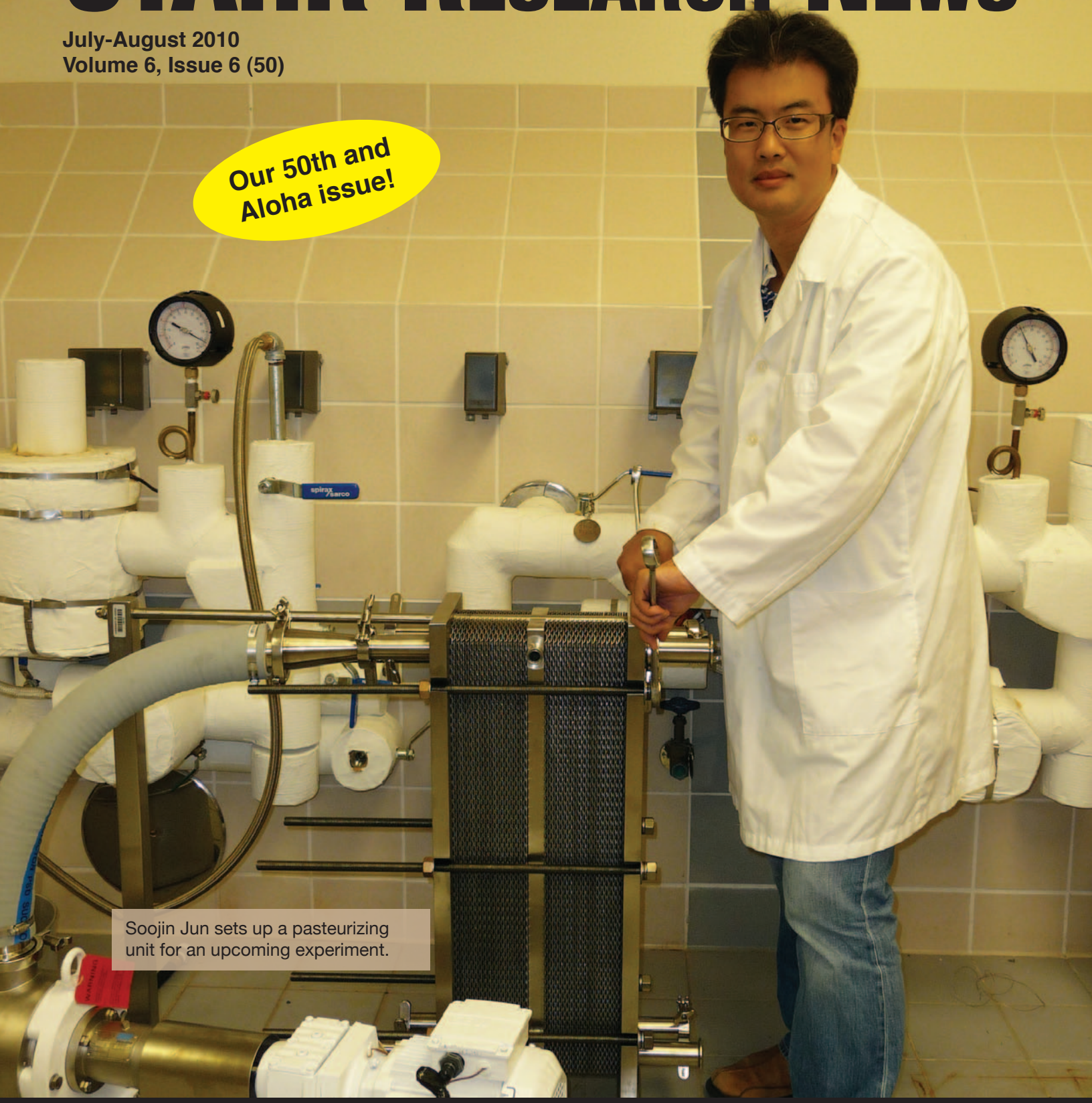
# CTAHR Research News

July-August 2010
Volume 6, Issue 6 (50)

Our 50th and Aloha issue!



Soojin Jun sets up a pasteurizing unit for an upcoming experiment.

## Food engineering for quality and safety

## TSTAR opens for applications

## CTAHR student in the Gulf of Mexico

In this issue

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# From the Associate Dean and Associate Director for Research

Change is inevitable! Summer has ended, and a new semester has already begun. I hope you all had a relaxing summer! The new development during the summer is that Dr. Sylvia Yuen assumed the Interim Dean's position, effective on July 16. Dr. Yuen has been the Director of our Center on the Family, was the Associate Dean for Academic and Student Affairs for more than 12 years, and was appointed the Interim Dean for one year more than 14 years ago. She knows CTAHR well, and is the most qualified person to lead CTAHR in the next couple of years. As you may be aware, I have started a half-time appointment in the Vice Chancellor's office beginning August 1 and will assume the position of Interim Assistant Vice Chancellor for Research and Graduate Education in January. Change brings a lot of uncertainty and associated readjustments are a must! However, change also presents opportunities in an organization. We need to seize the opportunities and make the necessary adjustments to elevate CTAHR to the next level. I am very grateful that I was given the opportunity to serve CTAHR as the Associate Dean and Associate Director for Research since January 2005. I have given all I have to CTAHR, and it is time for someone else who can bring fresh ideas and initiatives to move CTAHR research programs to the next level. This CTAHR Research News *(CRN)* marks the 50th issue since we started the series in the fall of 2005. This issue also is our aloha issue. CTAHR's Office of Communication Services will take over the duty to publish a monthly CTAHR news magazine to cover all three missions of our college. So, stay tuned!

Dr. Soojin Jun from the Department of Human Nutrition, Food and Animal Sciences is another newer faculty who joined CTAHR in 2006. His research is focused on food engineering. Food Science and Engineering is a critical area in overall agricultural production. Soojin's work helps Kona Coffee producers with purity determination, and his work with Dr. Yong Li on fast detection of bacteria in food products using biosensors is critical to the safety of our foods. Dr. Jun's projects can have a significant effect on local as well as national consumers. We anticipate great outcomes and impacts from Dr. Jun's laboratory in the coming years.

We also have a short piece on Dr. Andy Kaufman's lab from TPSS as well as one by HNFAS graduate student, Shawn Murakawa, on her work with the Gulf of Mexico clean up. Dr. J-P Bingham reports on the changes in research ethics. Dr. Sharee Pepper has prepared a summary of our awards and proposals submitted in the past six years. Faculty members are submitting more proposals, and more proposals were successful in the last several years. Although our total number of grants was not higher, this can be attributed to a smaller numbers of large grants in the past, as well as the impact of special grants. Clearly our faculty are making more effort and are more successful today in the competitive grant arena. Keep up the great work!

Thanks to Doug Vincent for his able assistance for more than four years and his reflection on the *CRN* in his final piece. Thanks to Po-Yung Lai for handling the special grants effectively after Doug's departure, and his piece on TSTAR.

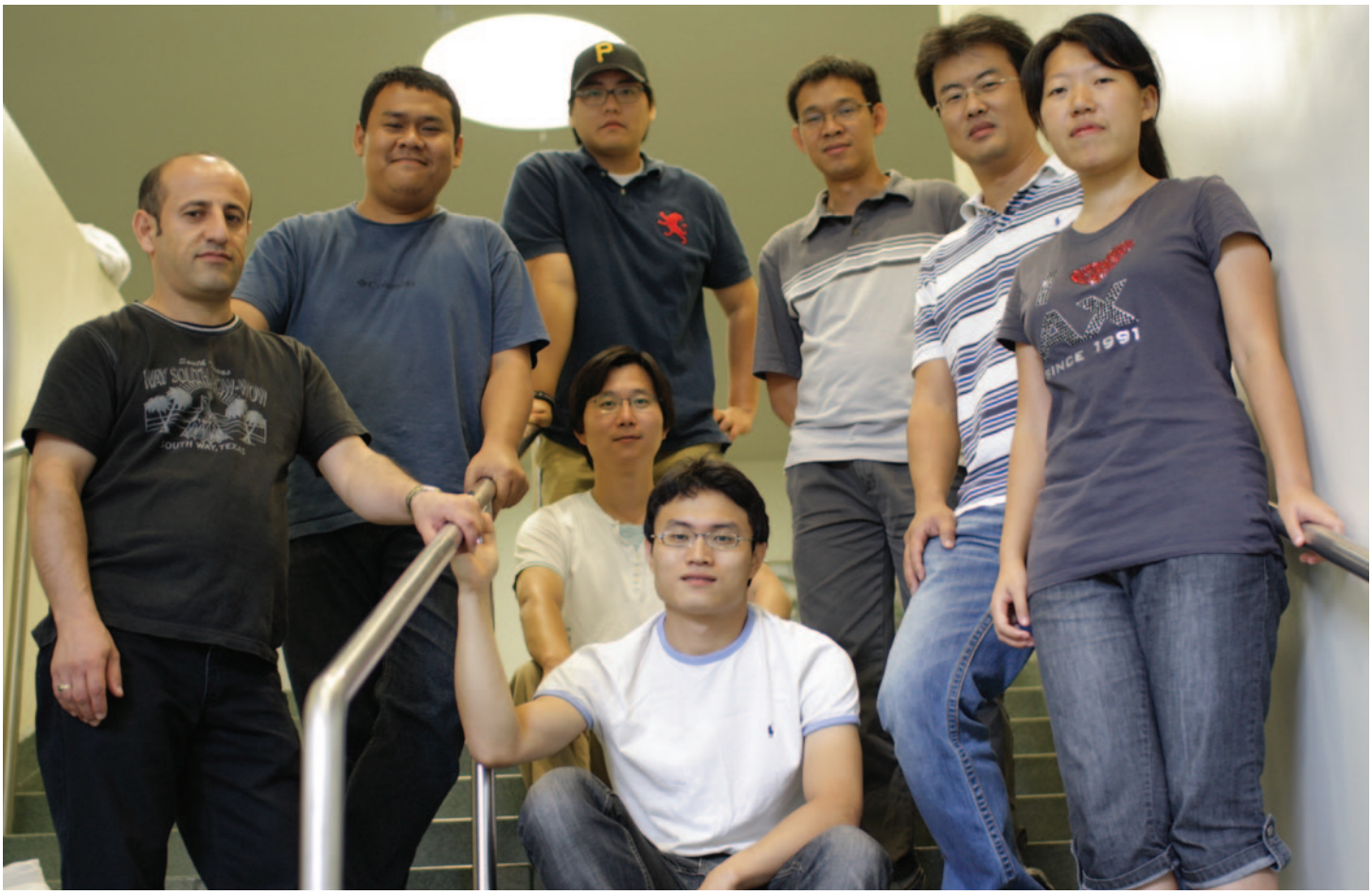
Finally, I would like to acknowledge the expert assistance from our editorial staff, Jim Hollyer, Sharee Pepper, and Jackie Tani. *CRN* will not be a reality without their dedicated work. Many thanks to Roxanne Yee, Eunice Morisaki, and Caren Char for their support. Finally, thanks to Dean Hashimoto for his encouragement and support in the past five and half years!

Farewell, my friends. *Mahalo nui loa!*

*C.Y. Hu*
*Associate Dean and Associate Director for Research*

# Food engineering makes a difference: ensuring food safety and quality

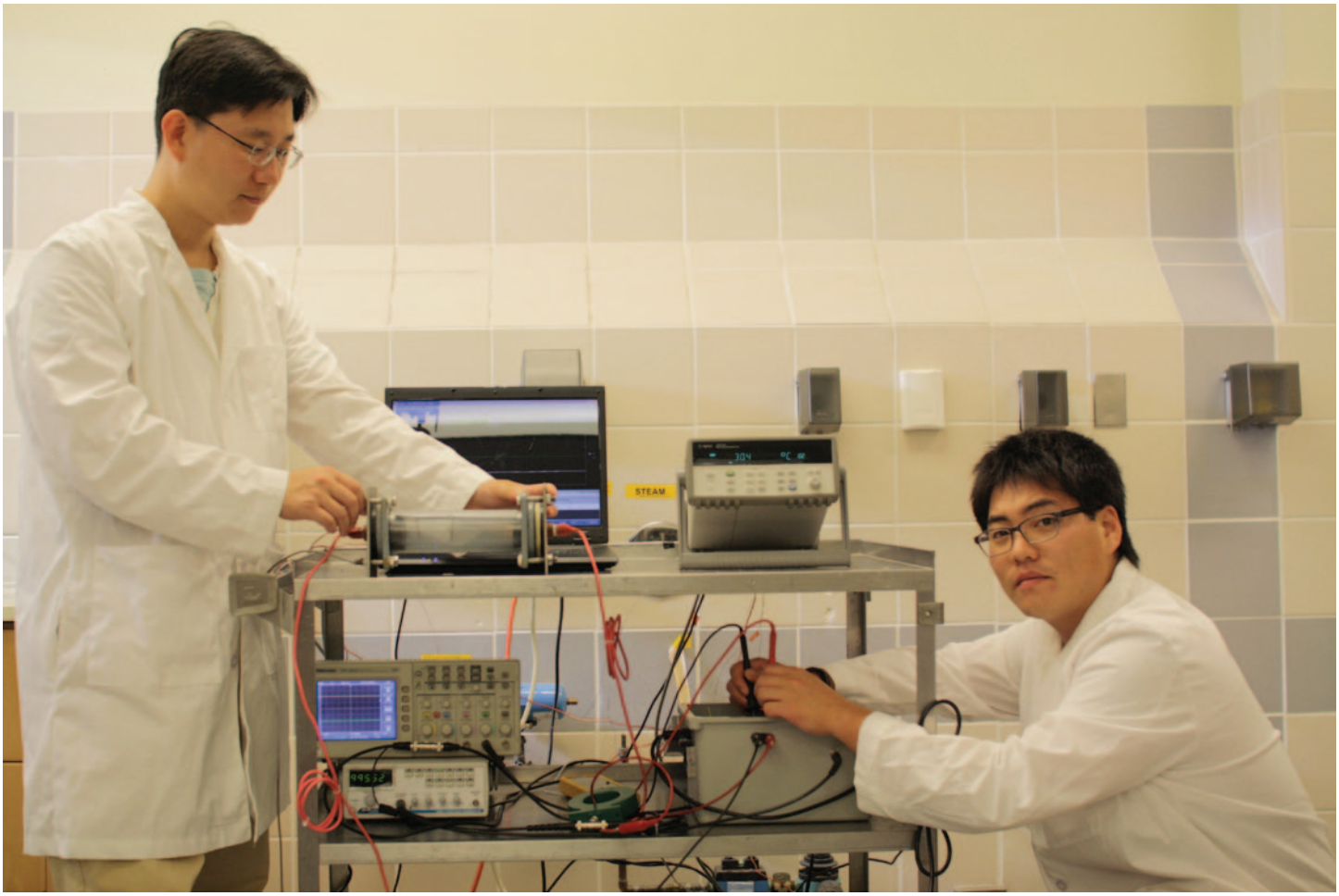
**By Soojin Jun (soojin@hawaii.edu)**
**Assistant Professor**
**Department of Human Nutrition, Food and Animal Science**



The Jun Lab (l to r, back): Seerwan Abdullah (Kurdistan), Natthakan Rungraeng (Thailand), Seung Hyun Lee (South Korea), Loc Nguyen (Vietnam), Dr. Soojin Jun (South Korea), Lin Lu (China); (middle): Won Choi (South Korea, top) and Sungkyung Kim (South Korea).

'Food engineer' . . . There are many types of engineers in the world: mechanical, civil, electrical, biomedical, robotics, chemical, environmental engineers, and of course, the food engineer. As a HNFAS student advisor, I am frequently asked, "what is a food engineer?" This question was then quickly followed by, "why does food need engineering?" Everyone seems to abuse the term of 'engineering' to raise the market value of his/her working majors. When the California-based, Sally Ride Science publisher, contacted me for an interview about food engineering, I was a bit surprised but also pleased because the mission of this publisher is to encourage and inspire 4th to 6th graders to explore science, engineering and math. They were devoting one chapter to cover an article on 'food engineering'.

As a college student I was initially drawn to the field of food engineering after a field trip to a local tofu manufacturer. Most of the processes were operated in a traditional way using a large amount of manpower and a tremendous amount of steam was wasted. In the U.S., most agricultural products require some type



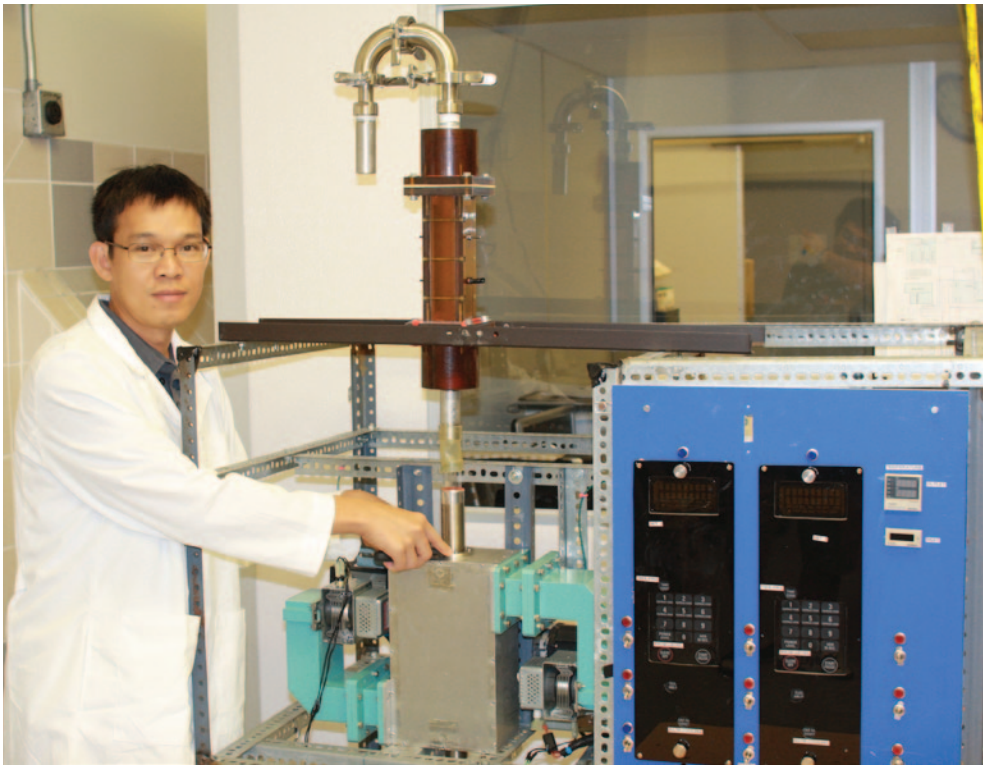

Won Choi (left) and Seung Hyun Lee (right) are doing an ohmic heating experiment and are taking sample temperatures. Ohmic heating is used to reheat, pasteurize or sterilize foods by passing the electric current through them. This custom-designed ohmic unit provides unique pulsed square waveforms at high frequencies.

of food engineering: from processing (pasteurization, sterilization, filtration, irradiation, homogenization, microwave heating, etc.) to packaging (active packaging, nano packaging, controlled atmosphere storage, canning, flexible packaging, etc). In a nutshell, food engineering includes the development of food processes, new packaging and storing methods, and any operation to improve the quality of food in terms of nutrition, food safety, and physio-chemical qualities.

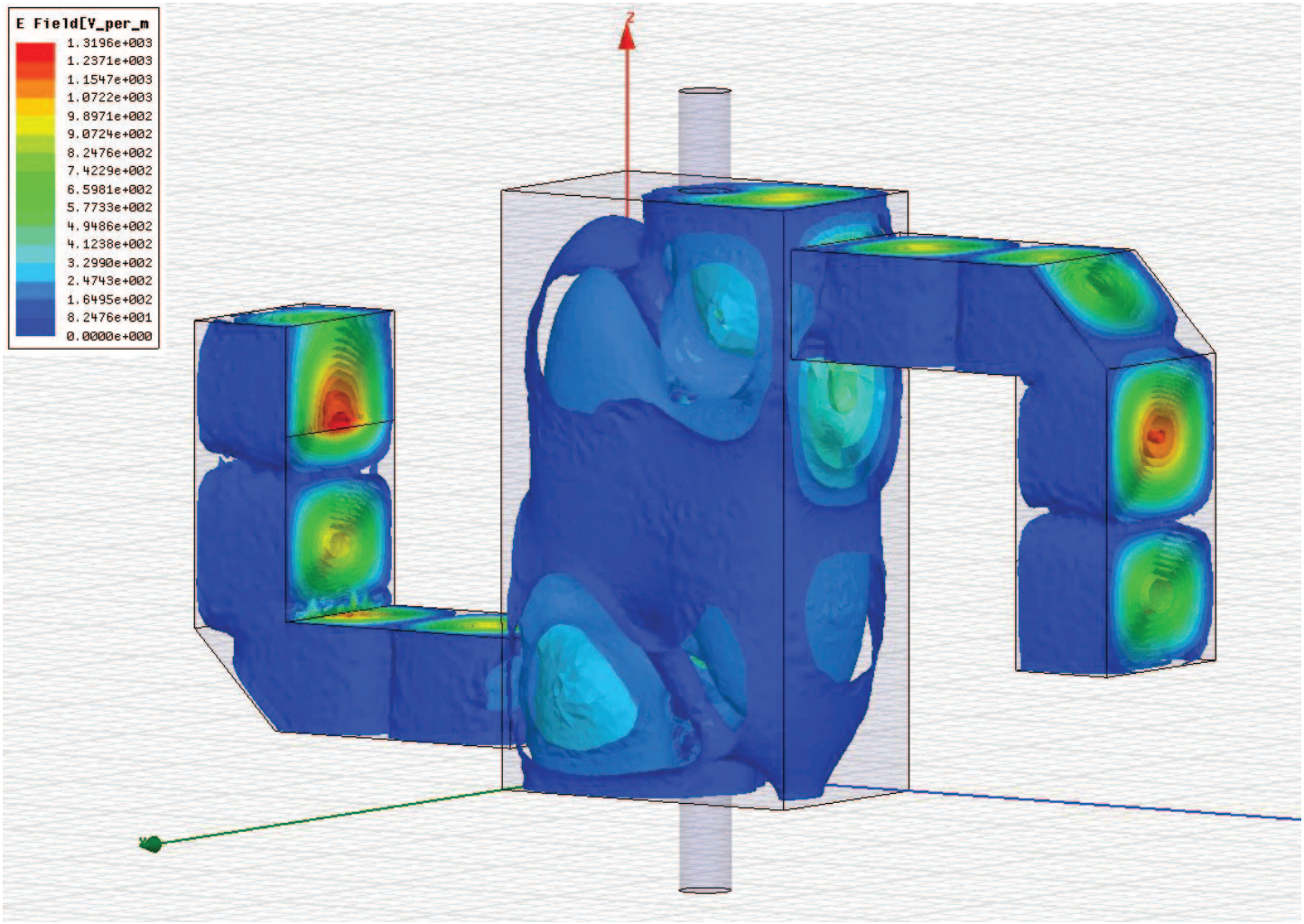
Modernization and automation of facilities and the employment of appropriate food processing technologies should be key for food manufacturers. We know that a significant time lag still exists on knowledge transfer from academic research results to industrial users. How effectively our academic research programs can meet food industry demands is critical, and accordingly my work has been focused on this interface.

Since January 2006 when I joined the University of Hawaii, the need for professional food scientists and engineers in this state (furthermore, in the mainland) has never been greater. The bottom line is that as identified in the CTAHR Strategic Plan in 2006, the College and Department intended to greatly strengthen the food science program by hiring two faculty members, including myself in food engineering and one with expertise in food microbiology (**Dr. Yong Li**). As of now, the food science program has three key areas of expertise covered: chemistry (**Drs. Wayne Iwaoka** and **Alvin Huang**), microbiology, and engineering, and these foundational talents help us meet the core competencies required by the Institute of Food Technologists (IFT) accreditation. However, there are other practical standards to be taken into consideration, such as curriculum, facilities, outcomes, and assessment. There are always challenges that we have to get over, but we will never stop working on the full establishment of a dynamic and realistic food science program for the College.

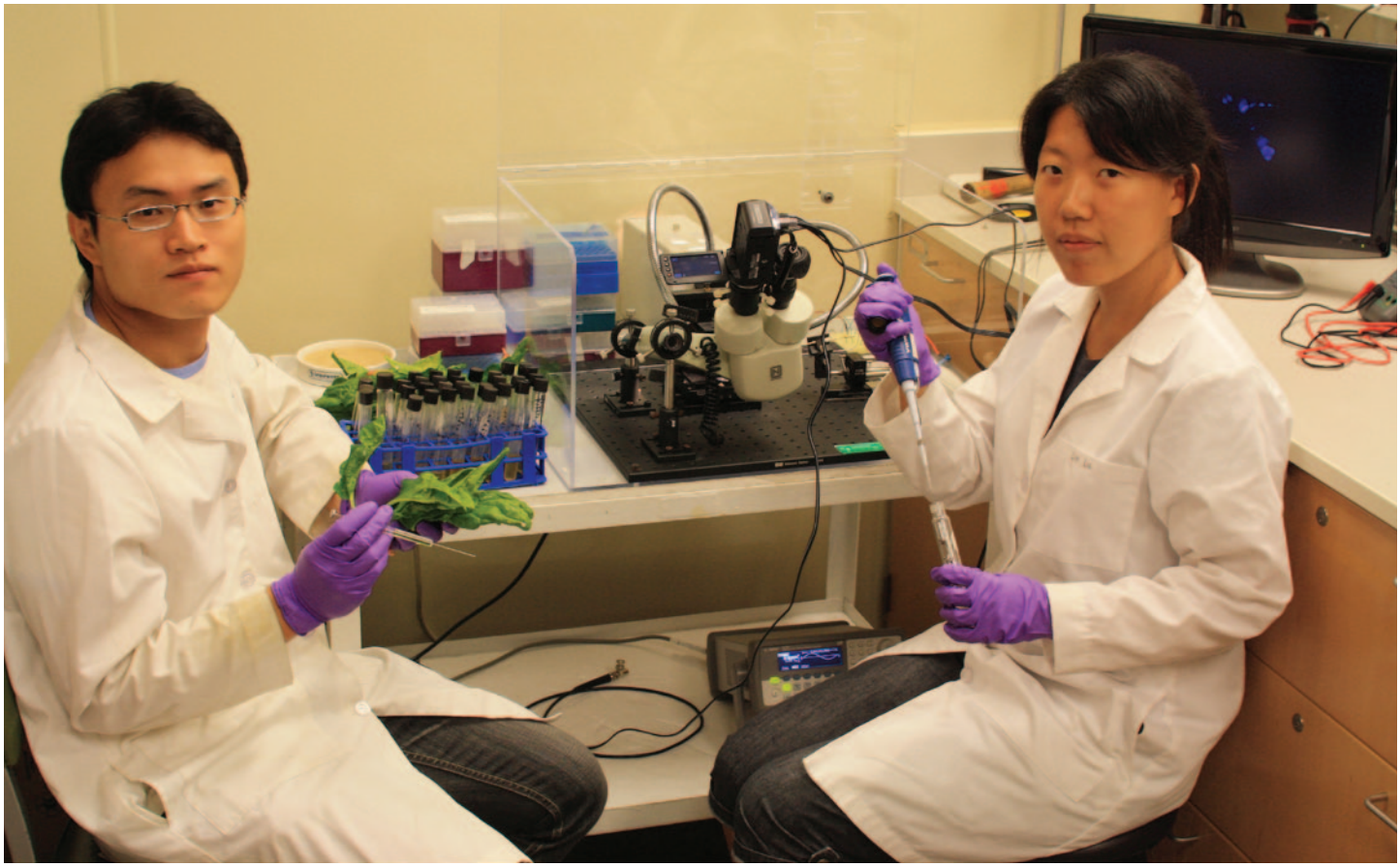
Since the retirement of some former CTAHR food engineers, there has been significant downtime



A combined microwave and ohmic heater under development in the food processing lab (Dr. Loc Nguyen).




A computer simulation of the electric field inside the microwave chamber.



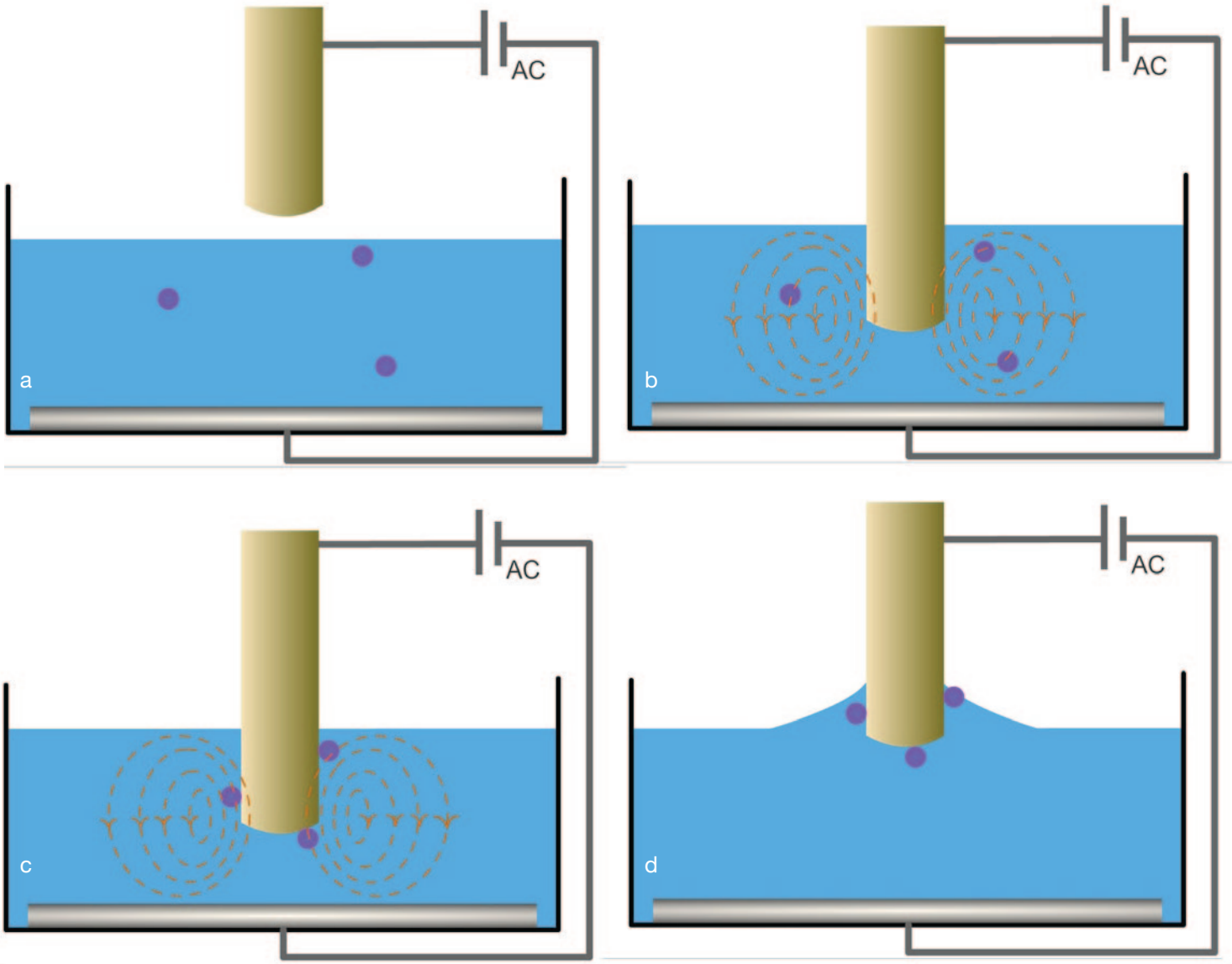
Sung Kyun Kim (left) and Lin Lu (right) are preparing to use microwire sensing to detect *E. coli* K-12 cells internalized in spinach leaves. Although *E. coli*-internalized leaves are often hard to find due to how the sample is collected or even if it is available at all, our lab was able to artificially inoculate the microbial cells in the leafy veins using a syringe.

for the food engineering program. This is unfortunate, because Hawaii's geographical location, within a global marketplace, requires that Hawaii's products have the quality and shelf life to be sold around the world. Thus, there is a great need for food engineers to support local processing businesses. To my knowledge, I am one of few food engineers active in Hawaii at this moment and my role is to establish and support our food science program. I have earned B.S. and M.S. degrees in food science curricula and a Ph.D. in agricultural and biological engineering curriculum. I believe my unique background blends engineering, chemistry, and microbiology in a holistic manner that strengthens the food engineering program and provides our students with great career opportunities. Here is a snapshot of our ongoing food engineering research projects.

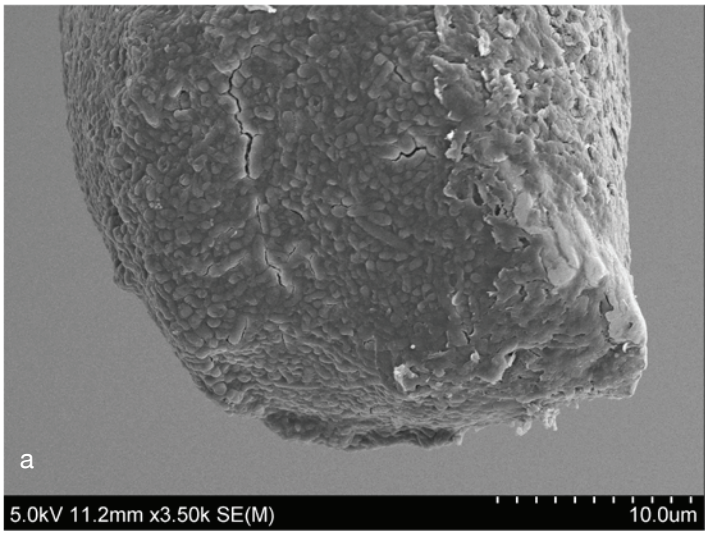
### Why combination processing technology?

The issue of food safety is of great public concern and has been drawing increasing attention. With frequent foodborne pathogen outbreaks associated with processed foods, as well as raw materials, there is a demand for better and safer food processing technologies – under-processed foods are also susceptible to microbial contamination. For example, the non-uniform thermal treatment of food particulates such as chunks of meat, carrots or potatoes in a soup can provide a growth medium for foodborne pathogens. During conventional thermal processing there also can be a temperature lag between this heating of the solids and liquids in the product. This lag is often addressed by over processing to make sure the entire product meets the safety criteria by eliminating all microbial dangers; however, not making the best possible product. Recently, however, technological advances in heating techniques such as ohmic and microwave, offer more uniform heating and thus present new opportunities to produce consistently high quality foods.

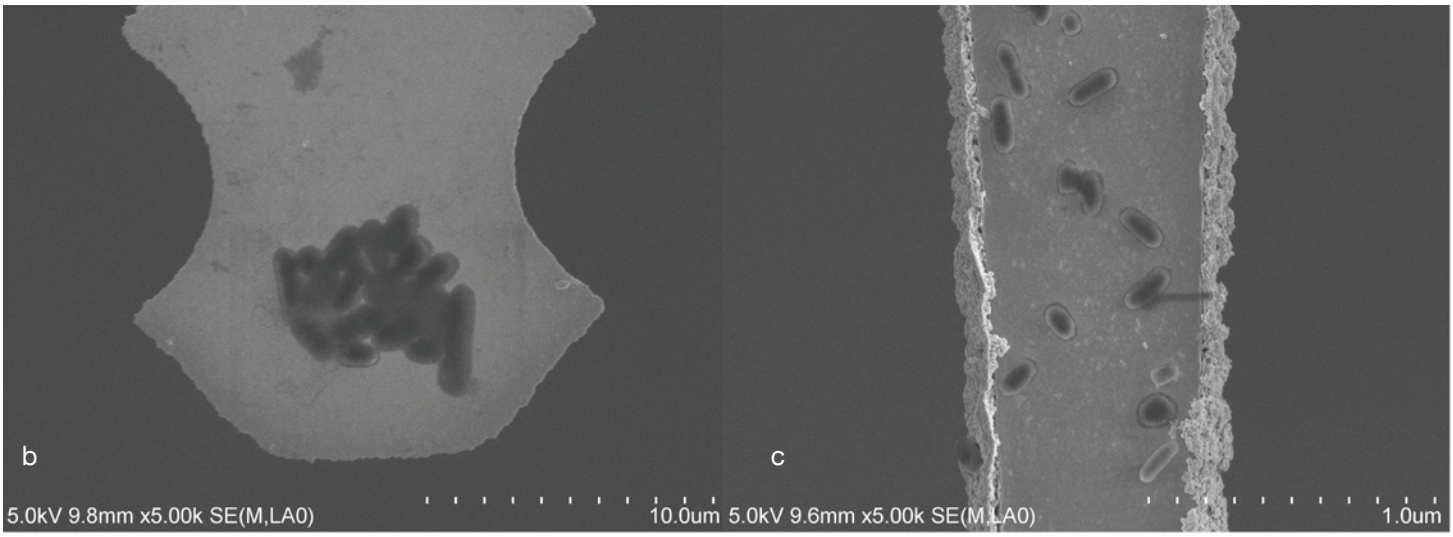
Ohmic heating is the process by which a food material is heated by an electric current. This current creates internal energy within the product. This energy is evenly distributed and thus a product is more evenly




Stepwise procedures for *E. coli* K-12 capture using dielectrophoretic and capillary forces. Once the microwire moves toward bacterial suspension, the strong electroosmotic flow occurs due to the electric field between the wire and sample loop. The flow drives particles (including cells) to move towards or away from the maximum field strength zone. The electrical sign of individual cells or solid particles (i.e. dielectrophoretic force) would depend upon the cell (or particles) permittivities and working frequency. The cells attracted to the wire tip are captured on the wire surface during the withdrawal process, primarily due to the capillary force.



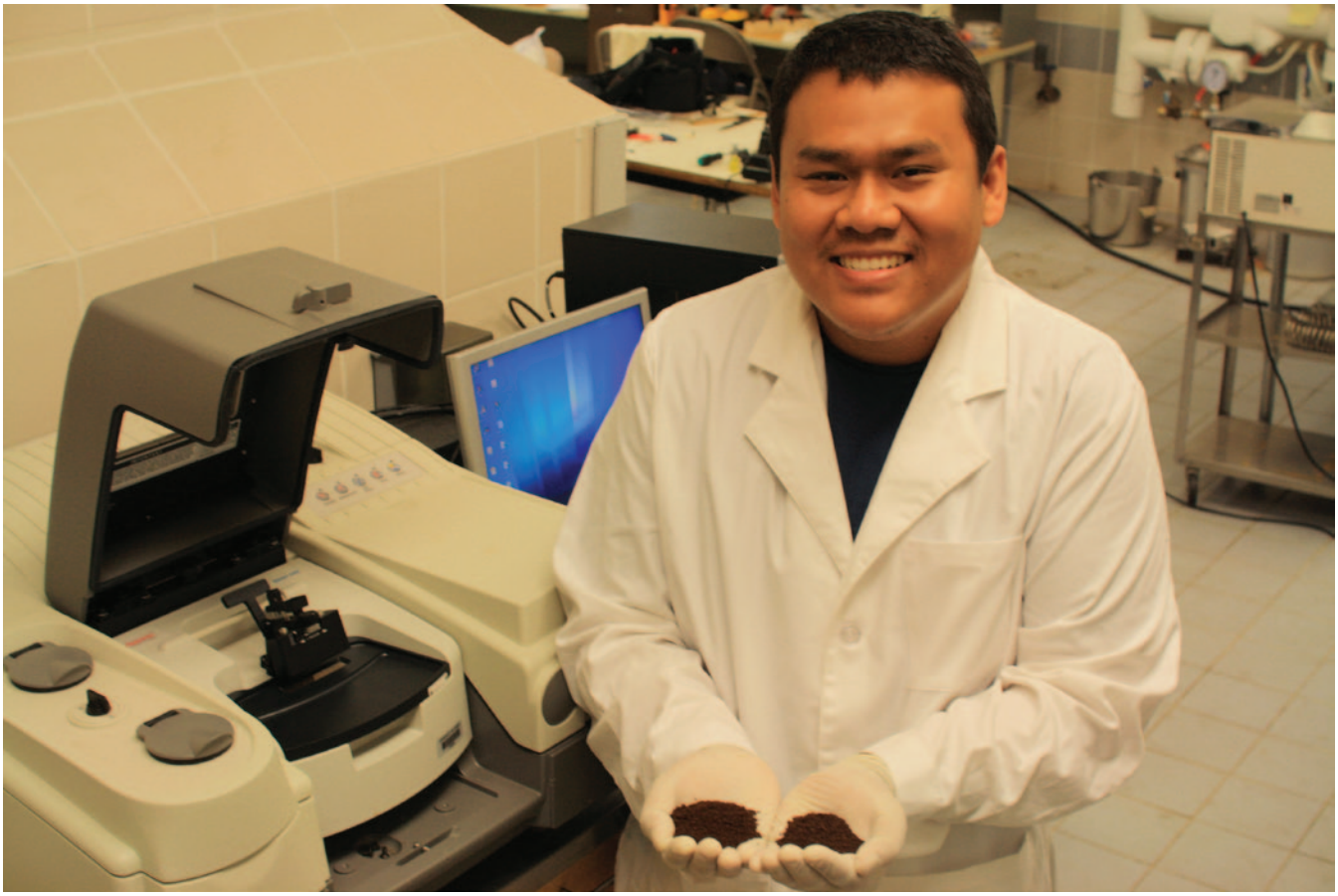

Validation of captured cells by SEM (a) microwire in 25 μm diameter, (b) microwire in 15 μm diameter, (c) nanowire in 500 nm diameter.

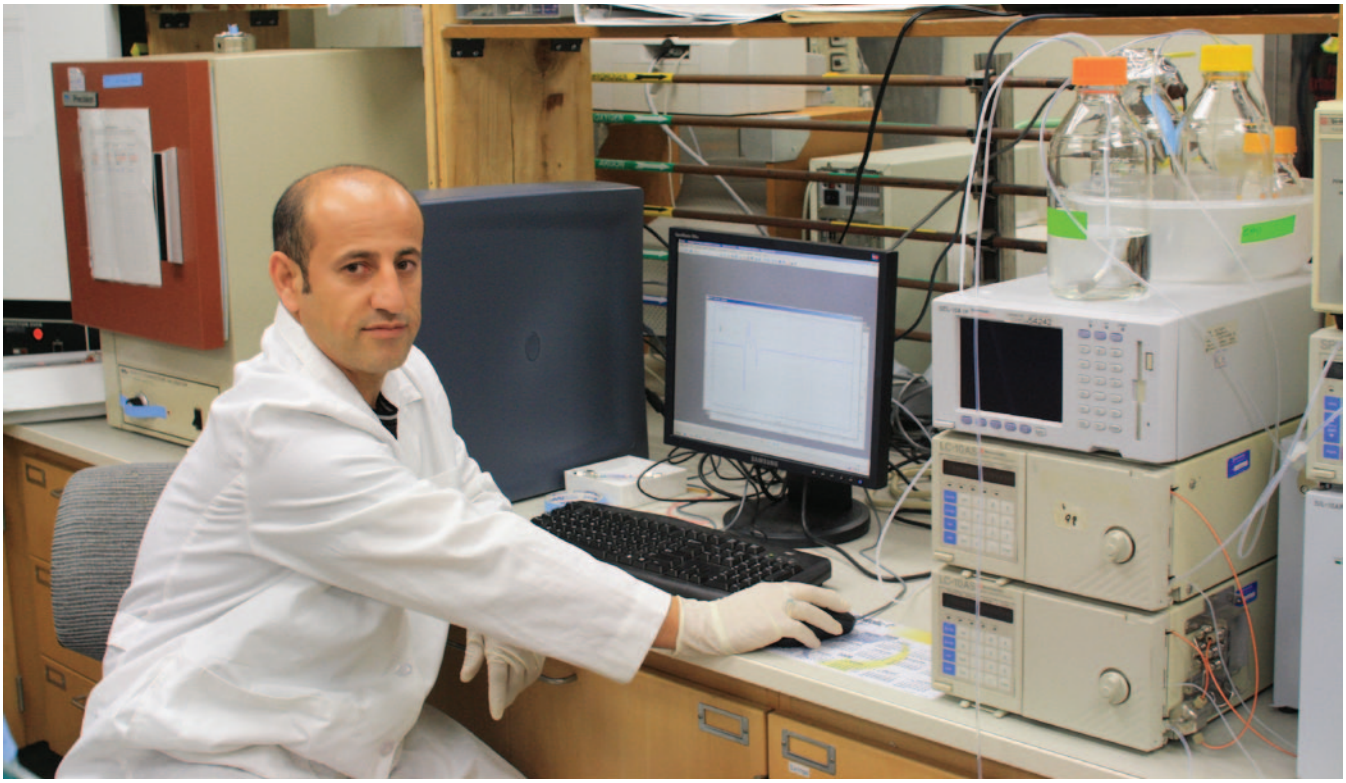



processed. However, even this technology has its shortcomings. The amount of energy created is different for solids and liquids, thus there is the possibility of under-processing and this creates questions for the quality and safety of foods processed using ohmic heating.

Using microwaves to process food is another option under further exploration. "Dielectric heating" using microwaves creates an oscillation of the dipolar structure of the water and ions in a food – it cooks the food by super rapid vibration. Heating occurs throughout the food, but like with ohmic heating, it can be inconsistent due to non-uniform shapes and compositions of various foods. Therefore, we are exploring combining the two heating technologies to eliminate the downsides of both processes. If successful, this would result in uniform heating throughout any food: liquids heated by ohmic current and solids heated by microwave.

One of our studies included the thermal treatment of a solid-liquid mixture similar to canned vegetable soup. By microwaves only, solid carrot particles heated up faster than 0.1% NaCl solution and at the end of the test there was a significant temperature variance between the solids and liquid ingredients: ~10°C. By contrast, when ohmic heating of the mixture followed microwave heating, the temperature of solid particles ended up close to that of the liquid, leading to a more uniform temperature throughout the product. Given this data, we believe that the development of a continuous-flow microwave and ohmic combination heater could provide new options for food sterilization. At the moment, continuous-flow processes of particulate foods are hampered by U.S. FDA concerns over processing residence time distribution. However, if we can demonstrate that a product containing food particulates can be heated rapidly and uniformly, a significant quality improvement may be expected and thus the process of FDA approval may be easier. We plan to file a patent on our combined system soon because we think this system has good potential.





Natthakan Rungraeng (top) is measuring spectral absorbance of Kona coffee blends using the FTIR spectroscopy and Seerwan Abdullah (below) is validating the FTIR predictions using the conventional measurement equipments such as HPLC and GC.

### Micro- and nanowire sensors for pathogenic detection

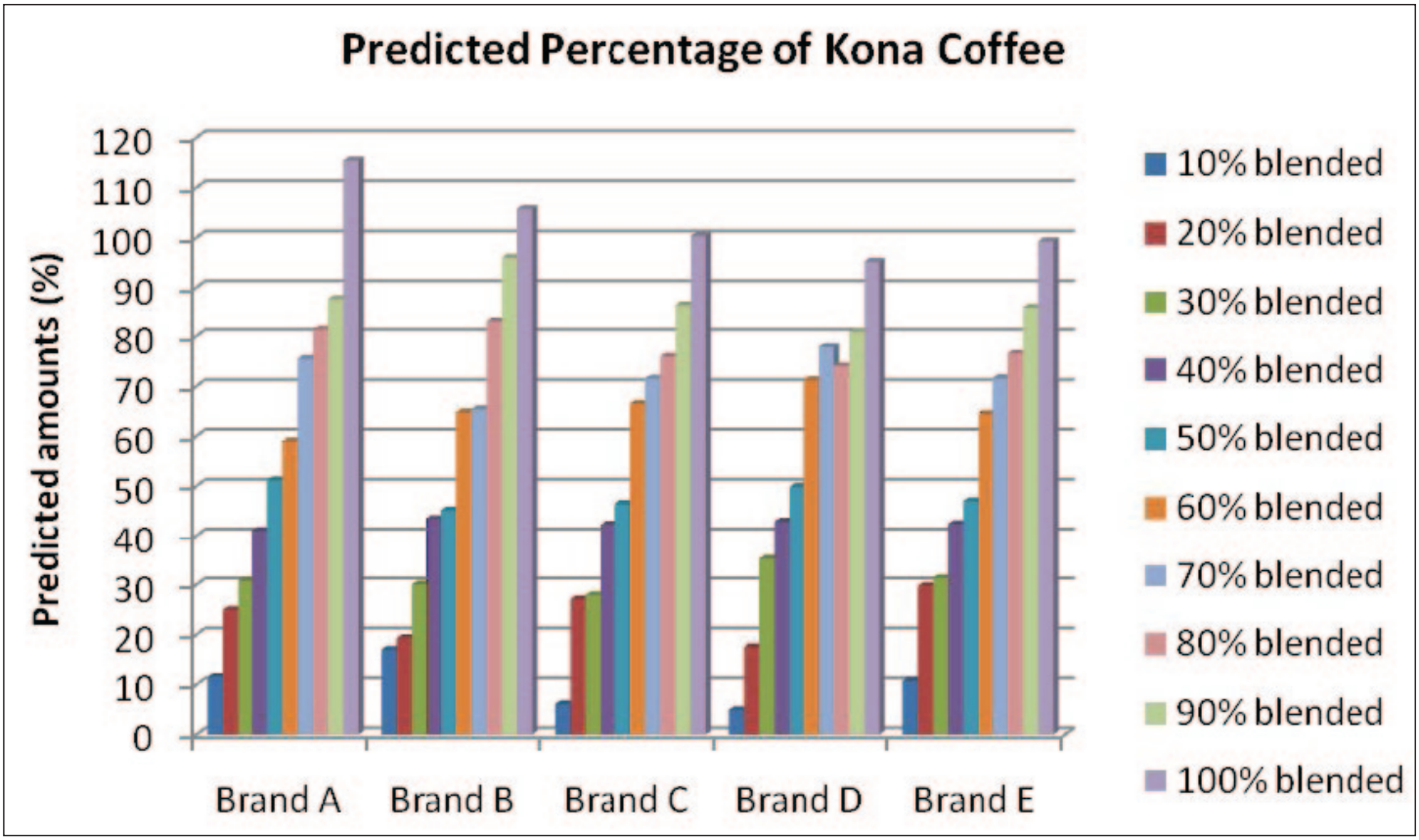
There has been an increase in the number of foodborne illnesses linked to the consumption of fresh and minimally processed fruits and vegetables. Some strains of *E.coli*, such as *E.coli* O 157: H7, can cause a variety of diseases, including diarrhea, urinary tract infections, respiratory diseases, meningitis and more. Many consumers rinse the fresh produce under cold running tap water to remove any lingering soil before preparing or eating. However, how do consumers know if there are pathogens hiding inside their produce even after rinsing? Many researchers have reported that *E. coli* internalization, which may occur when fresh produce uptakes *E. coli*-containing water or manure from the soil, could be a main cause of the foodborne illness. To ensure the safety of our drinking water, federal law requires that *E.coli* concentration cannot be higher than 1 CFU/mL. But, this testing has to be done in a lab and it takes a day or so to get the results. So, the question for our lab is "how can we rapidly detect such a low level of *E.coli* in an easy, efficient way?" To our knowledge, none of the traditional detections approaches, such as the culture-based method, polymerase chain reaction (PCR), surface plasmon resonance (SPR) biosensor, and Latex Agglutination, have performed perfectly nor are they rapid. Therefore, a rapid and accurate method for detecting foodborne pathogens, such as *E. coli*, in fresh produce is urgently needed in order increase the safety of our food supply. Our research lab has been involved in the development of a rapid detection method for foodborne pathogens in food systems using a microwire sensor coupled with a high frequency electric field. The key principles involved in this research are to combine the dielectrophoretic and capillary forces.

The testing process is as follows (sorry about the technical jargon): A microwire (25 μm Ø) was washed with ethanol, dried in air, and held on the xyz stage. 4 μL of sample aliquot (microbial solution) was placed on a ring-shaped electrode in 1.5 mm diameter after wash and was dried with ethanol and air, respectively. An alternating current (AC) field was supplied to the sensing system and microwire tips were vertically immersed in the aliquot at a rate of 200 μm/min. The wire tip was held inside the solution for 1 min and the wires were withdrawn from the solution at a rate of approximately 7 μm/sec. Initially, the microwire sensor was intended to concentrate and quantify *E. coli* cells in phosphate buffered saline (PBS) buffer. Then, the captured cells were bounded to fluorescein isothiocyanate (FITC) labeled polyclonal *E. coli* antibodies, which could emit different intensities of fluorescence to correlate with various concentrations of cells. A Field Emission Scanning Electron Microscopy (FESEM) was then used to validate and visualize the *E. coli* cells captured on the tip surface. Testing with *E. coli* cells that were internalized inside baby spinach leaves successfully validated the sensing characteristics of our device (sensitivity and specificity). It was found that spinach particles rarely affect the sensing performances, thereby making this a good candidate technology for food industries and the rapid detection of *E. coli*. As a bonus, we also designed additional sensing probes with smaller diameters (down to 0.5 μm) in order to enhance the size specificity and selectivity.

Another significant finding in our research was that our sensor could concentrate and enrich extracellular DNA makers of *E.coli* in food samples. The fluorescence signal out of DNA fragments captured onto the nanowire surface, after being bound to fluorescent DNA dye, is the key. Based on what we found out so far, a new nanowire sensor will be an alternative platform for immunosensing with technologies such as self assembled monolayers (SAMs). In addition, dead and live cells may be separately concentrated by synchronizing the working frequency based on their dielectric properties, i.e. complex permittivities. We trust that the detection of nonviable cells (dead) would effectively suppress production of false-positive results during the polymerase chain reaction (PCR) process. In fact, our lab is receiving several calls from industries and other research institutions for the potential collaboration with the subjects of protein concentration, RNA detection and water quality control.

### Authentication of Kona coffee

Kona is the name of a district on the Big Island of Hawaii. It has a unique weather pattern: sunny mornings, either cloud cover or rain in the afternoons, then little wind and mild nights. Moreover, Kona has porous, mineral-rich volcanic soil that is conducive to coffee growing. Kona coffee, Coffea arabica cultivar, is one of the most expensive and sought-after coffees in the world due to its excellent taste and aroma. Owing to the rarity and price of Kona coffee, some manufacturers use Kona-grown beans to make "Kona Blends". The Kona blends are not composed of the different types of Kona coffee, but rather other cheaper coffee beans instead. The minimum requirement for Kona blends is




Predicted percentage values of Kona coffee in 5 different brands. The predicted percentage values of Kona coffee in samples is almost similar to their actual values with the lowest SEP value of 0.74 and the highest $R^2$-value of 0.995. This finding demonstrates the potential of the developed model to estimate different percentages of Kona coffee in commercial brands Kona coffee blends.

10% of Kona coffee. In 2003-2004, the estimated value of Kona coffee market was $23.5 million.

The amount of Kona coffee in a blend directly influences to the selling price of that blend. Therefore, a tool to quickly authenticate the presence of Kona in a blend is advantageous to the industry to protect its name and the value of its product. Fourier transform infrared, or FTIR, spectroscopy is used to determine biochemical fingerprints of a product in a fast and nondestructive way. Using FTIR, our research lab established an authentication method for Kona coffee. The project's purpose was to develop an effective and credible analytical tool, using FTIR, to distinguish pure Kona coffee (and its adulterants) and to be able to quantify the percent of Kona coffee in a Kona blend. Fourteen 100% Kona coffee beans, obtained from fourteen different Kona farmers, were mixed and ground together to make a standard 100% Kona coffee. Three different types of non-Kona coffee beans from other areas of Hawaii were then ground and used as adulterant to the pure Kona coffees to make 10–100% Kona coffee blends. We found that Kona coffee had some special chemical components that were not found in non-Kona coffees: thus we found the Kona coffee's optical 'fingerprint'. FTIR data were analyzed, using a computerized statistical program, to produce a quantitative prediction model for Kona coffee. To test our model, five brands of pure Kona coffee were mixed with many kinds of non-Kona coffee, as adulterant, to produce 10–100% coffee blends. Predicted amounts of Kona coffee in these samples had good agreement with the actual blended proportions. This study demonstrated that FTIR could provide a rapid quantitative determination of Kona coffee in a commercial coffee blend. Our results have also been successfully extended to several other food applications such as quantification of artificial sweeteners in dairy foods, detection of honey adulterants, Kavalactones in Kava juice, trans fat in French fries, and melamine in milk.

### A new joint Culinology degree

Although not completed, we are working with the Culinary Arts program at Kapiolani Community College to develop a joint *Culinology* degree program. In this separate degree program, developed by the Research Chef Association of America, students take culinary arts, nutrition, and food science courses and become research chefs after they graduate. We need a food science program in place to offer the food science courses for students to participate in this emerging field. Food engineering is one of the key elements required for a certified food science program. We have conducted talks with the Food Service and Culinary Arts program and have basically agreed to a 4-year course of study for students to fulfill a Culinology degree. There are currently only nine institutions of higher learning in the US that offer a Culinology degree. Given Hawaii's strong culinary arts program in the three UH community colleges, this program appears to be very promising.

### Where's the pouched beef?

During the past three years, there has been an increasing demand by local food industries for high-end products from limited resources. One example is that Hawaii beef producers have been showing considerable interest in pouched beef samples that we have exhibited during the annual Mealani Forage Field Day. The pouched beef shows the potential of using retort pouches as an alternative package to cans as pouches are more environmental friendly and easier to use and store. This retort pouch technology has demonstrated that Hawaii can produce added value products from lesser valuable cuts of meat. We look forward to seeing commercial pouched beef products cooked by famous chefs' at our local grocery stores.

### Wrapping it up

As you can see we have a lot on our plate and in our cup! We are now working with a variety of local food producers and processors with products such as poi, abalone, fish, and chocolate. We are also involved in biofuel research, and sustainability and food security efforts. As a natural problem solver, my lab associates and I look forward to tackling big issues and helping to create a food science program that has a major impact in Hawaii. It is indeed a lifetime mission.

## Soojin Jun

**Hometown:** Seoul, South Korea
**Joined CTAHR:** 2006
**Educational History:** B.S. Food Science & Technology, Seoul National University, 1996; M.S. degree, Food Science & Technology, Seoul National University, 1998; Ph.D. Agricultural & Biological Engineering, Pennsylvania State University, 2002.
**Specialization:** Integrated food and biological process systems: system design, sensor/control, numerical modeling and optimization; nano technology and applications, biosensors, food packaging, food safety and microbiology
**Current Work:** Combination of microwave and ohmic heating techniques for uniform heating of particulate foods, Carbon nanotube coating on heat exchanger surfaces for fouling and biofilm prevention; Detection of *E. coli* O157:H7 using a Nanoneedle Probe Biosensor; CFD modeling of heating pattern of multiphase food and Pretreatment for subsequent ethanol production
**Languages Spoken:** English and Korean

**Recent Publications**


Shim J.Y., Lee, S.H., and Jun, S. 2010. Modeling of Ohmic Heating Patterns of Multiphase Food Products using Computational Fluid Dynamics Codes. *Journal of Food Engineering* 99(2): 136-141.

Wang, J., Jun, S., Bittenbender, H.C., Gautz, L., and Li, Q.X. 2009. Fourier Transform Infrared Spectroscopy for Kona Coffee Authentication. *Journal of Food Science* 74(5): C385-C391.

Krishnamurthy, K., Jun, S., Irudayaraj, J., and Demirci, A. 2008. Efficacy of Infrared Heat Treatment for Inactivation of *Staphylococcus aureus* in Milk. *Journal of Food Process Engineering* 31(6): 798-816.


**Recent Grants**

2009, USDA-AFRI, Development of Combined Continuous-Flow Microwave and Pulsed Ohmic Heating Technologies for Rapid and Uniform Heating of Multiphase Foods, Primary Investigator (PI): Soojin Jun, Co-PI: Olga Boric Lubecke, Amount: $374,798, Duration: 09/09 – 08/12.

2009, USDA, T-STAR, Innovative Nanoparticulate Surface Coating Technology to Minimize Fouling and Electrochemical Reactions during Tropical Juice Pasteurization, Primary Investigator (PI): Soojin Jun, Amount: $124,696, Duration: 09/09 – 08/11.

2008, USDA-Formula, Detection of E. coli O157:H7 using a Nanoneedle Probe Biosensor, Primary Investigator (PI): Soojin Jun, Co-PIs: Yong Li and Daniel Jenkins, Amount: $60,000, Duration: 10/08 – 09/11.

# What I did during my summer vacation – the adult version!

**By Shawn K. K. Murakawa**
**UHM - ANSC, BS '91**
**UHM - ANSC, MS '11**
**NOAA Pacific Islands Fisheries Science Center (PIFSC)**

Everyone is familiar with the phrase, "What I Did During My Summer Vacation." It brings back memories to the beginning of the new school year sitting in a classroom wishing that it was still summer time. My usual responses consisted of watching old Japanese movies at the family's Koga Theater in Waialua, watching chicks hatch or selling live chickens at my great-uncle's chicken farm in Haleiwa, swimming at Mokuleia Beach with my siblings and grandparents, or the unhappy memory of the dreaded summer school. As I grew older those memories faded away and my adult summers would consist of work either as a piano teacher, sales clerk at a pet store, or as an animal caretaker of laboratory animals. Never did I imagine that my summer would take me to the Gulf Coast of Mississippi. How did I get there? Well let me explain…

After graduating from the University of Hawaii-Manoa (UHM) with a Bachelors of Sciences degree in Animal Sciences, I was hired as a Biological Science Technician with NOAA. I learned a lot about sea turtles and experienced plenty of opportunities. I traveled to various states, cities, and foreign countries through NOAA and have significantly increased my knowledge about sea turtles. As I grew older, I realized that I wanted to continue increasing my knowledge of current theories


The Gulf of Mexico.

and techniques within the field of animal biology. Luckily, NOAA has an Advanced Studies Program and I was accepted into the 2-year program which would allow me to enter graduate school at UHM in 2009. As the 2010 Spring semester was winding down, NOAA was looking for volunteers to assist in the oil spill in the Gulf of Mexico. I provided my dates of availability and was honored to be chosen, along with two others, to be a part of the first sea turtle response team from NOAA PIFSC. In addition, my advisor, Dr. Douglas Vincent, and committee members fully supported and encouraged my trip to Mississippi.

On April 20, 2010, something tragic and terrible happened and I was honored to be providing assistance in this disaster. The BP Deepwater Horizon well had exploded in the Gulf of Mexico and 11 men had died. This was the largest offshore spill in world history as 2.2 million gallons were leaking from the well daily (up until capping the well on July 15) covering an area of 4000 square miles from Texas (although the tar balls were later thought to be brought there by ship) to Florida. Not only had human lives been taken, but the oil was affecting the lives and livelihood of the people and habitat of the coast. I found out later that I would be coordinating and responding to sea turtle strandings for the Gulf Coast of Mississippi as the number of sea turtle strandings was astounding. Normally sea turtle strandings were 20-30 annually. As of July 31, there were 247 dead turtles retrieved and 28 live turtles recovered. The NOAA laboratory in Pascagoula, Mississippi, needed assistance as they weren't equipped with personnel to recover these turtles. I was a part of the first turtle response team from PIFSC and we arrived in mid-June and expected to stay for 2 weeks.

When we first arrived, the sea turtle strandings were occurring on beaches so we drove up to 200 miles a day to recover any sea turtles that were reported. At times, we would work up to 15 hour days/7 days a week, driving back and forth the coast as the calls would come in. Later we found that turtles were being reported by the Vessels of Opportunities (VOO) floating in the water. This was a new experience for us as we had to develop the protocol and procedures to retrieve these turtles working with the VOO program. Now with two types of responses (on shore and water), our team of three soon became two as one member returned home. It was difficult at times trying to coordinate strandings, but we made it work and luckily the calls tapered to a manageable number. I did not encounter any oiled turtles, but gauze swab samples were taken from every turtle to be analyzed for a petroleum signature within their body. As the two weeks were coming to an end, I was extended twice to assist with training new team members that were arriving from Hawaii. I was happy


Rescuing a turtle from the Gulf.


We collected data on all the turtles we found.

to stay as I was pleased to contribute in any way that I could. Who knew a local girl from Mililani could make a difference in Mississippi?

I have since returned from Mississippi after a month long stay. I am proud of NOAA PIFSC's role in the recovery of sea turtle strandings along the Gulf Coast of Mississippi. NOAA has always cooperated to assist when needed as two of NOAA's core values are teamwork and service. I can proudly say that these values were accomplished while NOAA PIFSC was there. My "summer vacation" to Mississippi was an exhausting, exciting, distressing, and eye-opening experience. The hard-working people of Mississippi will not be forgotten by me. I have made life-long friends and have kept in touch with some of them to this day. People I met at the hotels, on the beach, in stores and restaurants have thanked me for my services, but I want to thank them for being resilient to another horrible event that has happened in their home even though some of them are still recovering from the effects of Hurricane Katrina. I want them to remember that they are not forgotten because my summer vacation in Mississippi will be one that I will always cherish. I am missing the southern hospitality, the fried dill pickle chips (yum!), and most of all the people I have met, but I know that I will return one day soon to spend a true summer vacation in Mississippi.

A fabulous Gulf-coast sunset.

# A holistic approach to landscape: people, plants, research, and application

**By Andrew Kaufman (kaufmana@ctahr.hawaii.edu)**
**Associate Professor**
**Department of Tropical Plants and Soil Sciences**

The Kaufman Lab (l to r): Dr. Andy Kaufman, Dr. Sangmi Lee (Korea), Alberto Ricordi (Brazil), Roxanne Adams (Molokai, HI), Tim Gallaher (Kaneohe, HI), Aliah Irvine (Waianae, HI), Aarthi Padmanabhan (India).

Plants provide us with many benefits such as food, shelter and other environmental qualities. Additionally, plants provide us with many social and aesthetic qualities that may be elusive or not fully recognized. To help uncover these benefits, Andy has developed and heads the Tropical Landscape and Human Interaction Lab. The lab is a multidisciplinary research laboratory dedicated to studying the connection between plants, the outdoor landscape and the associated human responses. The lab draws upon the disciplines of environmental psychology, horticulture, sociology, psychology, and landscape architecture in order to reveal and understand people's emotional, psychological, social and physiological responses to vegetation and outdoor designed spaces. The Labs focus is on the connection between natural features (trees, shrubs, groundcovers, indoor plants and green space) and the outcomes related to healthy human functioning such as, an individual's well-being; vitality of communities, health of the natural environment, providing understanding between/within conservation of natural resources and economic vitality at micro and macro levels. One of the main focus of the lab is utilizing Psychophysiology, which is measuring or identifying the connection between a physiological response and the psychological construct, then, linking or formulating the conceptual definition to an operational definition. Essentially, psychophysiology is obtaining or recording a real time response of an individual's behavior to an environmental stimulus. This behavior is based on a biological/evolutionary perspective: "approach response", meaning that the

reason that we respond to certain stimuli in a particular fashion is that our movements are either toward positive things or away from negative, unpleasant things. The significance of psychophysiological measurements is that we are measuring "action potential" of a muscle from neurons generating this potential in the muscles. The lab has the ability to measure: heart rate (EKG), galvanic skin conductance response (GSR), facial muscle activity (EMG), and electroencephalograph (EEG) physiological responses. These are considered to be valid and reliable real time indicators of cognitive and emotional processes engaged by the human brain as it processes stimuli in an individual's environment. These cognitive/emotional processes are related to attention and emotional responses that are the foundation from which stress and the expression of positive/negative emotion emerge, having powerful effects on individuals' well being.

The intention of my lab is to use its findings to:

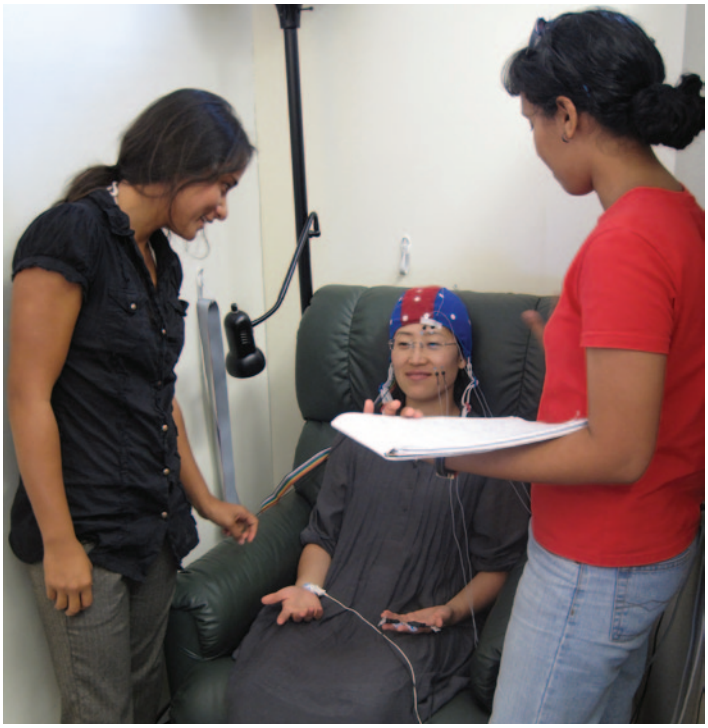
- Increase the awareness of peoples' and society's need for ornamental and natural plants and landscapes, and then to educate stakeholders about the use of and care for green landscaping to help individuals, families, and communities to flourish.
- Assist the landscape design, installation, and maintenance profession of the importance of proper plant selection, installation and care as a component of built and natural landscapes. This is to aid the landscape industry to effectively create and promote healthy environments for people to live, work, and recreate in.
- -Inform and educate policy makers of the importance that plants and the designed landscape are for healthy communities and individuals; and the need for appropriate legislation to foster these environments.
- Identify and record peoples' emotional and physiological responses to landscape stimulus.
- Explore the potential of Green Roof technologies for Hawaii, and the associated materials and process needed for establishment.
- Investigate peoples' emotional and physiological responses to Green Roof technologies, and to look

Roxanne Adams, Tim Gallaher, and Andy Kaufman are reviewing GIS data from the field which is mapping vegetation for tsunami and storm surge mitigation.

at the opportunities and barriers of this landscape technology.

- Examine the aesthetic qualities of the urban forest and natural landscapes in Hawaii as perceived by native Hawaiians and visitors to assist in design and management of both built and natural landscape environments.
- Address the academic and behavior responses to indoor plants in high school classroom settings in order to improve academic and behavior issues in Hawaii schools.
- Investigate peoples' emotional and physiological responses to tropical trees and pruning practices to develop better educational, policy, and management techniques for Hawaii's urban trees.
- Assist Hawaii's Landscape Industry by identifying and introducing alternative ornamental plants in response to invasive species issues.

This work is tremendously rewarding and I look forward to sharing the results of more of our work with you!



Aliah Irvine (left) and Aarthi Padmanabhan are preparing Dr. Sangmi Lee to test a new psychophysiological protocol for an upcoming experiment.

## Andrew J. Kaufman

**Hometown:** Panorama City, California
**Joined CTAHR:** 2004
**Educational History:** B.S. Ornamental Horticulture, Cal Poly S.L.O, 1992; M.L.A. Landscape Architecture, University of Arizona, 1998; M.S. Sociology, Environmental Sociology, Iowa State University, 2000; Ph.D. Horticulture, Environmental Psychology, Washington State University, 2003.
**Specialization:** Environmental Psychophysiology, Landscape design, Landscape History and Theory.
**Current Work:** Studying the connection between plants, the outdoor landscape and the associated human responses. Specifically, researching people's psychophysiological responses to environmental stimulus. Also, I am testing alternative ornamental plant materials to be used in the landscape industry to replace those plants that have been identified as invasive. Additionally, I am researching Green Roof technologies for the tropics, as well as examining vegetation mitigation for tsunamis and storm surge in tropical and sub-tropical environments, and alternative ornamental landscape plants to replace those that have been identified as invasive.
**Languages Spoken:** English

**Recent Publications**


Spooner, D. and Kaufman, A. 2009. University Campus Fabric: How Campus Open Spaces Support Students' Studying Behaviors. *Council of Educators in Landscape Architecture* (CELA '09). Tucson, Arizona.

Kaufman, A., Adams, R., Cox, L. 2008. A Tropical Paradise: Native Hawaiians and Visitors to Hawaii Landscape Perception of Aesthetic Qualities of the Urban Forest and Natural Landscapes of Hawaii. In: C. A. Shoemaker, (Editor), Horticultural Practices and Therapy for Human Well-being. *Acta Horticulturae* 775 International Society for Horticultural Science. Pp. 131-137

Kaufman, A. J. and Lohr. V. I. 2008. Does it Matter What Color Tree You Plant? In: E. Matsuo (Editor), Acta Horticulturae 790 *"Exploring Therapeutic Powers of Flowers, Greenery and Nature."* International Society for Horticultural Science. Pp.179-184


**Recent Grants**


Kaufman, A. Dacus, C., Nimz, S., Oka, S, & Gilman, E. 2011. Reducing Infrastructure Damage by Trees Hawaii Department of Transportation, Highways Division (HDOT). $198,000.

Kaufman, A. Criley, R., Kawabata, A. 2009. Green & Healthy Hawaii: Identifying & Introducing Alternative Ornamental Landscape Plants in Response to Invasive Species Issues. DLNR Division of Forestry and Wildlife: Hawai'i Invasive Species Council Research and Technology Projects. (DLNR/HISC) $120,516.

Kaufman, A., Cox, L., & Bolls, P. 2008. Beyond Tropical & Quaint: People's Psychophysiological Urban Forest Response.National Urban and Community Forestry Advisory Council 2008 Challenge Cost-Share Grant Program. (NUCFAC) $112,577.

# It's about being compliant – insight into the new regulations that govern Federal training awards and grants*

**By Jon-Paul Bingham, Assistant Professor**
**Department of Molecular Bioscience and Bioengineering**

In recent months various changes have been undertaken within federal departments/institutes regarding how we submit or write our research grant applications – the NIH 'short form' and NSF fast track electronic submission, these illustrate both the condensing and streamlining of the past out-dated funding review processes. Yet unknown to many, more changes are on the horizon or have been already implemented. Some of these changes specifically revolve around the institutional training of our research students in the 'responsible conduct of research' (RCR).

I was fortunate enough to attend the NIH sponsored 16th Annual Conference on "Teaching Survival Skill and Ethics", Santa Fe, New Mexico, in which Drs. Beth Fischer and Michael Zigmond (University of Pittsburgh) inducted the 30 or so attendees into the many new federal requirements to help maximize the federal government's investment leading to the success of our future scientists in USA.

Although my discussion here focuses on the NIH mechanisms, similar mechanisms are in place for NSF training grants, career grants, fellowships and research education grants. While private foundations are stating to following with these same recommendations. It is expected that the USDA will be implementing similar compliance measures with awards that support student and graduate student endeavors.

**So what is Responsible Conduct of Research Compliance all about?**

The NIH "Update on the Requirement for Instruction In Responsible Conduct of Research" (Notice No. NOT-OD-10-019) has some very specific provisions that will need to meet federal expectations of 'compliance' – noting in grant applications 'compliance' will be deemed 'ACCEPTABLE' or 'UNACCEPTABLE' by peer review process and used as a criteria for its potential funding success (I'll talk more about how to overcome this specific issue below):

First lets define some of the basic principles regarding Responsible Conduct of Research (CRC), as per NOT-OD-10-019:

- Responsible conduct of research is an essential component of research training. Therefore,

Participants at the ethics workshop.

instruction in responsible conduct of research is an integral part of all research-training programs, and its evaluation will impact funding decisions.

- Active involvement in the issues of responsible conduct of research should occur throughout a scientist's career. Instruction in responsible conduct of research should therefore be appropriate to the career stage of the individuals receiving training.
- Individuals supported by individual funding opportunities such as fellowships and career development awards are encouraged to assume individual and personal responsibility for their instruction in responsible conduct of research.
- Research faculty of the institution should participate in instruction in responsible conduct of research in ways that allow them to serve as effective role models for their trainees, fellows, and scholars.
- Instruction should include face-to-face discussions by course participants and faculty.
- Instruction in responsible conduct of research must be carefully evaluated in all NIH grant applications for which it is a required component.

Faculty Participation: Training faculty and sponsors/mentors are highly encouraged to contribute both to formal and informal instruction in responsible conduct of research. Informal instruction occurs in the course of laboratory interactions and in other informal situations throughout the year. Training faculty may contribute to formal instruction in responsible conduct of research as discussion leaders, speakers, lecturers, and/or course directors. Rotation of training faculty as course directors, instructors, and/or discussion leaders may be a useful way to achieve the ideal of full faculty participation in formal responsible conduct of research courses over a period of time.

So if you do not think that is enough, NIH and NSF have even provided specific curricular requirements that must be met at a minimum. This is the seriousness of Federal Government's stance in ensuring that our future research scientists are provided the necessary training and skills for success, and lays this responsibility firmly on the mentors, advisors and instructors shoulders – which naturally will need administrative support. Key discussion areas that need to be met (NIH), include:

- Conflict of interest – personal, professional, and financial
- Policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory practices
- Mentor/mentee responsibilities and relationships
- Collaborative research including collaborations with industry
- Peer review
- Data acquisition and laboratory tools; management, sharing and ownership
- Research misconduct and policies for handling misconduct
- Responsible authorship and publication
- The scientist as a responsible member of society, contemporary ethical issues in biomedical research, and the environmental and societal impacts of scientific research

So in CTAHR what are we specifically doing about being deemed Compliant 'ACCEPTABLE'?
Presently two courses are focused on addressing these requirements in an aid to further establish good training practices for our students. Naturally as mentors and advisors considering these classes for your students may provide them the competitive professional edge and install a foundation for professional conduct. As discussed in the "Teaching Survival Skill and Ethics" conference, it is expected that in the future federal grants - training, career or research, involving students (graduate and undergraduate) will be required to provide accredited CRC training – this is coming and so it is best to be prepared!

(i) FSHN 697 Fall – 1 Credit (Dr. Dian A. Dooley)

**FSHN 697: Research Ethics for Graduate Students**

Course Description (Tentative) Lecture-discussion, small class size. Case-study approach to identity, discuss, understand, and resolve practical ethical dilemmas in/of scientific research, based on philosophical frameworks. Open to Master's and Doctoral students (1 credit).

**Objectives:**
Upon completion of this course, you should be able to:

1. Identify and discuss several philosophical frameworks for resolving ethical issues in/of scientific interest
2. Understand the breadth and depth of ethical issues that are involved in doing scientific research
3. Identify and use reputable, valid resources to identify and resolve ethical issues in scientific research
4. Participate (both orally ad in writing) in discussion and resolution of a variety of ethical case studies related to 'real-life' scientific research.

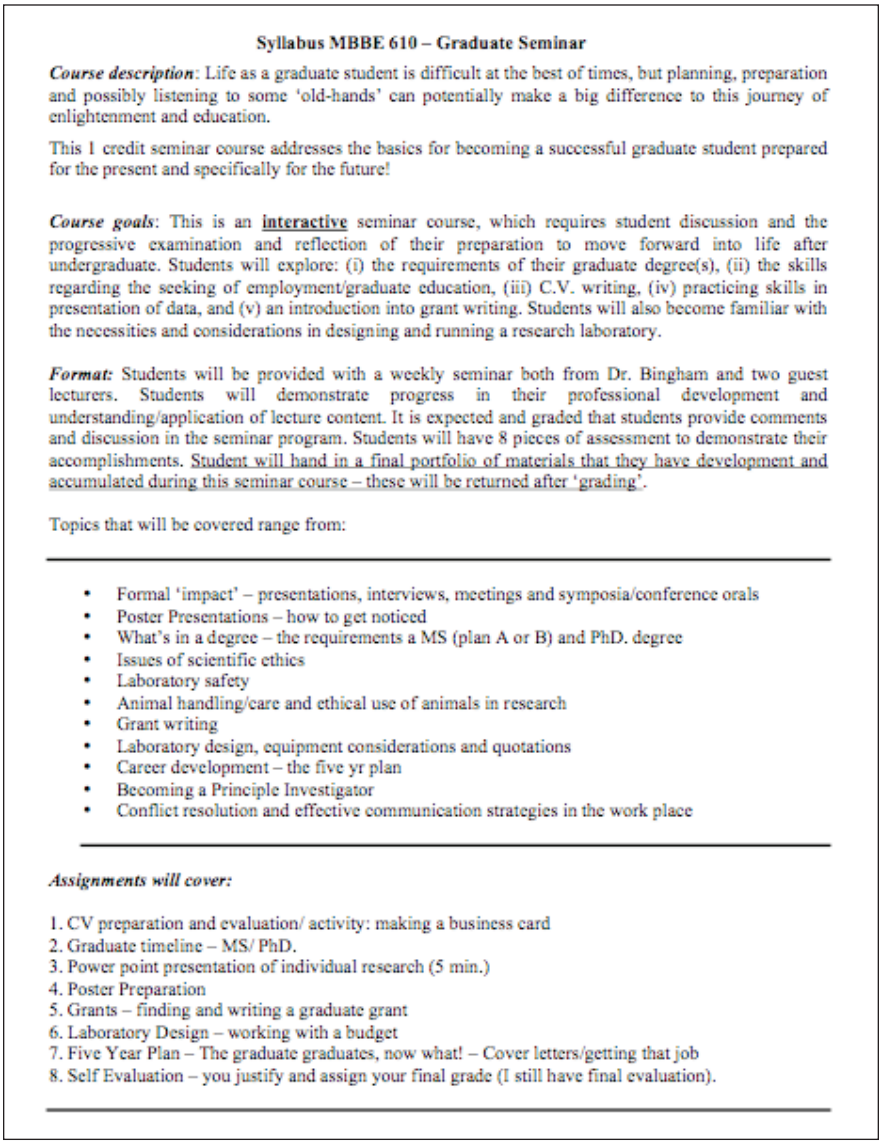
**Recommended Prerequisites:** Graduate standing in CTAHR (either MS. or PhD. Program). While the course has been developed for students in Nutrition Science, students from other CTAHR programs and other Colleges are welcome, upon consultation with the instructor. Advanced, select undergraduate HNFAS students may enroll, with permission of the instructor and the student's academic advisor.

**Required Text:** On Being a Scientist: Third Edition; Committee on Science, Engineering and Public Policy, National Academy of Sciences, National Academy of Engineering, and institute of Medicine (2009) ISBN:0-309-1191-5, 82 pages.
Free PDF is readable/downloadable at: <http: www.nap.edu/catalog/12192.html>
In addition, required readings will be assigned each week, either as links to web articles or as handouts. There will be a substantial reading assignment each week.

Topics Studied:

- Ethical frameworks; Codes of ethics
- Land Grant/History and Research
- Space/Sea/Sun Grant Programs
- Mentoring/Advising
- Collaboration/Authorship decisions
- Data management/Presentation of results; Mistakes/Negligence; Misconduct: fabrication, falsification, and plagiarism (FFP)
- What about to do about FFP?; Consequences of FFP Whistle-blowing
- Human Studies (CHS/IRBs)
- Animal Studies (IACUC)
- Laboratory Safety/Biosecurity
- Peer review/Publication
- Philosophy of Research: Social, scientific and personal responsibilities

(ii) MBBE 610 Spring – 1 Credit (Dr. J-P. Bingham) – this course is in transition and will obtain its own course number shortly.



**Syllabus MBBE 610 – Graduate Seminar**

***Course description***: Life as a graduate student is difficult at the best of times, but planning, preparation and possibly listening to some 'old-hands' can potentially make a big difference to this journey of enlightenment and education.

This 1 credit seminar course addresses the basics for becoming a successful graduate student prepared for the present and specifically for the future!

***Course goals***: This is an **interactive** seminar course, which requires student discussion and the progressive examination and reflection of their preparation to move forward into life after undergraduate. Students will explore: (i) the requirements of their graduate degree(s), (ii) the skills regarding the seeking of employment/graduate education, (iii) C.V. writing, (iv) practicing skills in presentation of data, and (v) an introduction into grant writing. Students will also become familiar with the necessities and considerations in designing and running a research laboratory.

***Format:*** Students will be provided with a weekly seminar both from Dr. Bingham and two guest lecturers. Students will demonstrate progress in their professional development and understanding/application of lecture content. It is expected and graded that students provide comments and discussion in the seminar program. Students will have 8 pieces of assessment to demonstrate their accomplishments. Student will hand in a final portfolio of materials that they have development and accumulated during this seminar course – these will be returned after 'grading'.

Topics that will be covered range from:

- Formal 'impact' – presentations, interviews, meetings and symposia/conference orals
- Poster Presentations – how to get noticed
- What's in a degree – the requirements a MS (plan A or B) and PhD. degree
- Issues of scientific ethics
- Laboratory safety
- Animal handling/care and ethical use of animals in research
- Grant writing
- Laboratory design, equipment considerations and quotations
- Career development – the five yr plan
- Becoming a Principle Investigator
- Conflict resolution and effective communication strategies in the work place

***Assignments will cover:***

1. CV preparation and evaluation/ activity: making a business card
2. Graduate timeline – MS/ PhD.
3. Power point presentation of individual research (5 min.)
4. Poster Preparation
5. Grants – finding and writing a graduate grant
6. Laboratory Design – working with a budget
7. Five Year Plan – The graduate graduates, now what! – Cover letters/getting that job
8. Self Evaluation – you justify and assign your final grade (I still have final evaluation).

**So how do we become compliant?**

Promote good research practices to our students, providing good professional guidance, research environment and importantly promote their learning by requesting their enrollment in the above classes. For the Principal Investigators we are presently drafting a standard statement for research grant applications that need a 'compliance statement' regarding student instruction in RCR. This will help ensure that 'ACCEPTABLE' compliance status is 'checked-off' in the grant review process. Noting that peer grant proposal reviewers are specifically asked to comment and provide a score!

I would also like to promote Dr. Doug Vincent's ANSC/FSHN 697 Grant Writing for Graduate Students (Fall 2010), in effort to even further advance our CTAHR students with the necessity tools and experience to survive in the competitive world of research. Our student's need a strong foundation to build their future careers on and as educators it's our duty to correctly train the next generation or researchers.

So how do we know we on the right track in educating our students for life beyond CTAHR?
I asked the following question in my MBBE 610 Seminar course evaluation: "Ten years from now I'll probably remember this course most by..." This is what students had to say:

- There is much more to becoming a professor in the sciences than I expected.

- This course helped me to take responsibility for my future and take it more seriously in one direction.
- I will remember this course every time I revise my CV or write a cover letter or grant ... or when I think about/evaluate my career goals.
- I feel I have matured professionally through the development of my portfolio. This portfolio will hopefully follow me through many successful interview processes and get me where I want to be.
- Having better tools to increase my chances at getting the job of my choice. My mom just told me she wished she took this class.

RCR Policies:
NIH:
http://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-019.html

NSF:
http://www.nsf.gov/pubs/policydocs/rcr/faqs_mar10.pdf

USDA - Responsible Conduct of Research: Administrative Issues Concerning Research Integrity and Compliance
http://www.cur.org/quarterly/mar10/spring10dehn.pdf

Guidelines for the Responsible Conduct of Research: Ethics and the Publication Process
http://www.asha.org/docs/html/GL2009-00308.html

# Faculty publications

**Greg Bruland (NREM)**
Bruland, G.L., C.A. Browning, and C.I. Evensen. 2010. Effects of feral pigs (Sus scrofa) on watershed health in Hawai'i: A literature review and preliminary results on runoff and erosion. Chapter 11, p. 251-277 in J. Roumassett, K. Burnett, and A. Balisacan (Eds.), *Sustainability Science for Watershed Landscapes.* Institute of Southeast Asian Studies; Los Banos, Philippines: Southeast Asian Regional Center for Graduate Study and Research in Agriculture.

Grunwald, S., G.M. Vasques, N.B. Comerford, G.L. Bruland, and C.M. Bliss. 2010. Regional modeling of carbon, nitrogen and phosphorus geospatial patterns. Chapter 9, p. 293-310 in G. Hanrahan (Ed.), *Modeling of Pollutants in Complex Environmental Systems*, Volume II. ILM Publications, Hertfordshire, UK.

**Chennat Gopalakrishnan (NREM)**
Gunatilake, H. and C. Gopalakrishnan. 2010. 'Technical Efficiency of Sawmilling and the Conservation of Natural Forests: Evidence from Sri Lanka." *Journal of Natural Resources Policy Research* 2(2):149-169.

Levy, J.K. and C. Gopalakrishnan. 2010. "President Obama's Offshore Drilling Policy and Energy Security: A Game-Theoretic Policy Analysis." *Journal of Natural Resources Policy Research* 2(3): 195-212.

Levy, J.K. and C. Gopalakrishnan. 2010. "Promoting Ecological Sustainability and Community Resilience in the US Gulf Coast after the 2010 Deepwater Horizon Oil Spill." *Journal of Natural Resources Policy Research* 2(3): 297-315.

**Kenneth Grace (PEPS)**
Morris, P. I., J. K. Grace and K. Tsunoda. 2009. Field testing of wood preservatives XVIII: Performance of borate-treated wood against subterranean termites. *Canadian Wood Preservations Association Proceedings* 30: 272-295.

**Arnold Hara (PEPS)**
Marr, S. R., S. A. Johnson, A. H. Hara, M. E. McGarrity. 2010. Preliminary evaluation of the potential of the helminth parasite Rhabdias elegans as a biological control agent for invasive Puerto Rican coquís (Eleutherodactylus coqui) in Hawaii. *Biological Control* 54: 69–74.

Tsang, M.M.C., A. H. Hara and M. H. Shintaku. 2010. Thermal tolerance of propagative anthurium stem cuttings to disinfestation by heat treatment for burrowing nematodes and bacterial blight. *Crop Protection* 29: 525-531.

Hara, A., C. Jacobsen, S. Marr and R. Niino-DuPonte. 2010. Hot water as a potential disinfestation treatment for an invasive anuran, the coqui frog, Eleutherodactylus coqui Thomas (Anura: Leptodactylidae), on potted plants. *Inter. J. Pest Manage*. 56: 255 – 263.

**Shu-Hwa Lin (FCS)**
Lin, S. (2010). Exploratory analysis of Chinese-American family caregivers' needs and instructional video on dressing stroke survivors. *International Journal of Consumer Studies*, 34, 581-586.

**Russell Messing (PEPS)**
R.G. Van Driesche, R.I. Carruthers, T. Center, M.S. Hoddle, J. Hough-Goldstein, L. Morin, L. Smith, D.L. Wagner, B. Blossey, V. Brancatini, R. Casagrande, C.E. Causton, J.A. Coetzee, J. Cuda, J. Ding, S.V. Fowler, J.H. Frank, R. Fuester, J. Goolsby, M. Grodowitz, T.A. Heard, M.P. Hill, J.H. Hoffmann, J. Huber, M. Julien, M.T.K. Kairo, M. Kenis, P. Mason, J. Medal, R. Messing, R. Miller, A. Moore, P. Neuenschwander, R. Newman, H. Norambuena, W.A. Palmer, R. Pemberton, A. Perez Panduro, P.D. Pratt, M. Rayamajhi, S. Salom, D. Sands, S. Schooler, M. Schwarzländer, A. Sheppard, R. Shaw, P.W. Tipping and R.D. van Klinken.
Classical biological control for the protection of natural ecosystems. *Biological Control* Volume 54, Supplement 1, pages S2-S33

**Alan Titchnel (HNFAS)**
Lai, J.F., J. Dobbs, M.A. Dunn, S. Tauyan, and C.A. Titchenal. 2009. Inconsistent values for iron content complicate recommending clams as an iron source. *Journal of Food Composition and Analysis*. 22(Supp 1):S78-S82.

Murakami S., S. Kurihara, C.A. Titchenal, M. Ohtani. 2010. Suppression of exercise-induced neutrophilia and lymphopenia in athletes by cystine/theanine intake: a randomized, double-blind, placebo-controlled trial. *Journal of the International Society of Sports Nutrition*. 7:23.

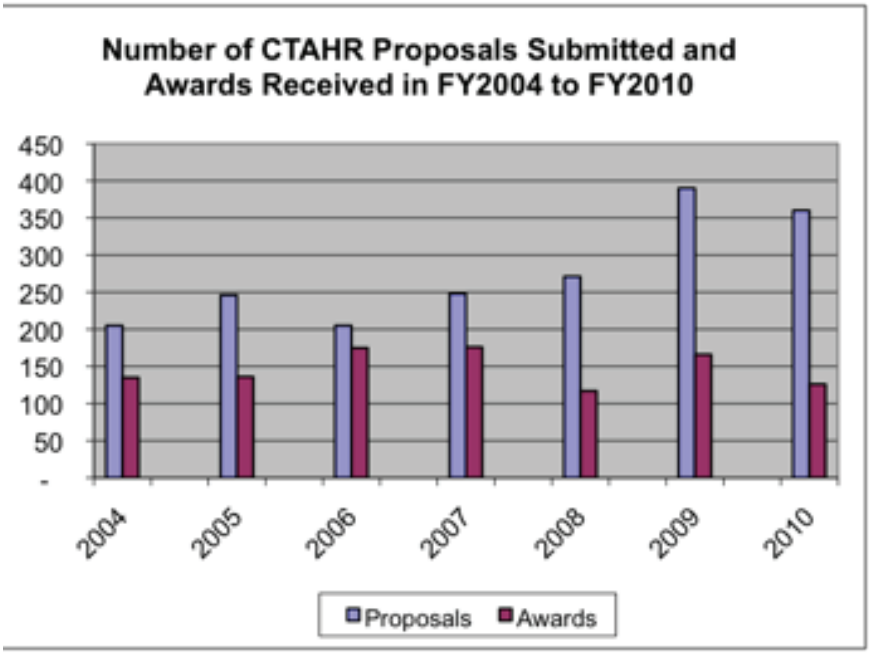
# CTAHR proposals submitted and awards received from FY 2004 to FY 2010

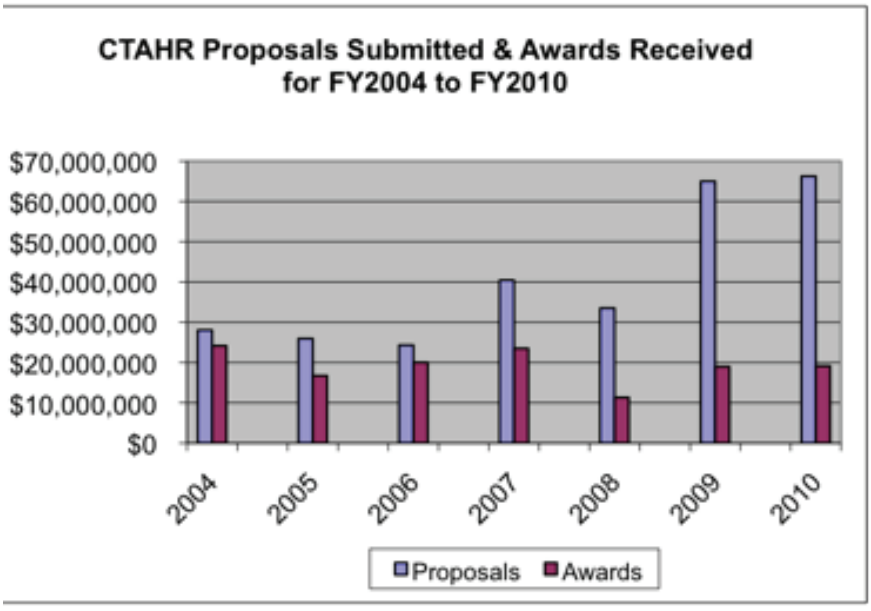
**By Sharee Pepper**
**Grant coach**

The following tables and graphs summarize both the budgets requested and the number of proposals submitted compared with the budgets and number of awards received by CTAHR faculty from FY2004 to FY2010*. These data are likely a reflection of the interaction of both internal and external variables. For example, the drop in number and amount of awards since 2008 coincides with the decreased funding for non-competitive earmarks and special grants that began in FY2007 and became apparent in FY2008 (due to funding lag times). These data also suggest that:

- Both the number of proposals submitted and the total dollars requested has steadily increased during the past 6 years.
- There was a significant increase in both proposals and dollars requested in 2009.
- The average size of the requested budget per proposal was $184K for 2010, which was the highest for any year.
- These data demonstrate the reality that as funding becomes more competitive and the amount of non-competitive funding is reduced, more time and effort will be required to achieve CTAHR's goals.

In order to match or exceed past success, CTAHR faculty will need to continue to increase the number and size of the grants they submit for funding to meet the challenges of the future. It is clear that faculty should also be applauded for their efforts to deal with these realities to date.




* Note that due to the frequent 9 month lag time between submitting a proposal and actually receiving an award, the data in the following graphs should not be directly compared. For example, some of the FY2008 proposal data may actually be more directly comparable to the FY2009 award data. Therefore, these graphs are most useful for comparing trends and not exact numbers.

# Tropical and Subtropical Agricultural Research (TSTAR) and Other Special Programs - FY 2011

**By Po-Yung Lai**
**Special Program Director for Grants and Contracts**

### 1. TSTAR

It is time to revisit the schedule for the Request for Proposal (RFP) for the FY 2011 Tropical and Subtropical Agricultural Research (TSTAR) program. Despite the uncertainty of the Congressional Appropriations for FY 2011, it was determined that the best strategy is to forge ahead with the RFP process in hopes that selection of the proposals for funding will be ready when funds become available. It was also determined that the process for prioritizing commodities, including solicitation of inputs from faculty, would take much longer to complete than expected. As such, no priority list will be proposed in the FY 2011 RFP guidelines. However, this prioritization effort will continue until it is completed. Hopefully, it will be in time for the FY 2012 RFP.

The tentative timetable for this RFP is as follows:

| | |
|---|---|
| August 24, 2010 | Call for proposals |
| September 17, 2010 | Letter of Intent due |
| October 25, 2010 | Full proposals due at the CTAHR Office of Research |
| November 2010 | Panels established and proposals delivered for peer review |
| December 2010 | Panels convened for scientific merit review of proposals |
| March 2011 | Pacific Basin Administrative Group meeting in Washington, D.C. for funding decisions. Announcement of decisions thereafter. |
| Aril 2011 | Final versions of proposals selected for funding be submitted to USDA-NIFA via Grants.gov. |
| Sept.-Oct. 2011 | Funding commence pending the availability of funds. |

The intent of announcing the above timetable is to alert faculty and other researchers for an earlier start in preparing Letters of Intent and Full Proposals.

See the following link to the URLs of the CTAHR web page for the RFP guidelines and template: http://www.ctahr.hawaii.edu/site/Employee/downloads/rfp/TSTAR_sFY2011.doc (for the short version of the FY2011 RFP guidelines); http://www.ctahr.hawaii.edu/site/Employee/downloads/rfp/TSTAR_Full.doc (for the RFP guidelines); http://www.ctahr.hawaii.edu/site/Employee/downloads/rfp/TSTAR_Template.doc (for the template)

### 2. Floriculture Research and Agricultural Diversification Grants

RFPs for these two federal grants from USDA-NIFA will be announced sometime in early November 2010. Similar to the TSTAR grant, funding of the selected projects under these two grants will be subject to the availability of federal funds.

### 3. Protecting Papaya from Pests and Diseases Grant

A new Specific Cooperative Agreement (SCA) with USDA-ARS has been drafted with valuable inputs from the Pacific Basin Agricultural Research Center (PBARC) and CTAHR faculty and sent to the Director of PBARC for approval. Once this draft SCA is approved, its funding period will cover 5 years starting from September 2010. It is, therefore, anticipated that the RFP for this SCA will be announced sometime in early 2011.

**4. Other USDA-ARS Grants, including BBTV, Tephritid Fruit Fly, Minor Crop Pests and Diseases, and Feedstock for Aquaculture and Livestock**

No new SCAs for other special grants would have to be initiated as they were either approved and executed in 2008 for Feedstock for Aquaculture and Livestock or in 2009 for BBTV, Tephritid Fruit Fly, and Minor Crop Pests and Diseases. Announcements of RFPs for new proposals for these SCA grants are expected to be in March 2011.

If there is any question on this announcement, please kindly contact me at laip@ctahr.hawaii.edu or 1-808-956-8157.

# Grant money is still available

**By Sharee Pepper**
**Grant coach**

The following list includes some current funding opportunities that may be of interest to CTAHR faculty. If the deadline is too short for this year, it is still a good indication of the likely due date for next year. Let us know if we can be of any assistance with developing and editing your grant application.

For information on submitting grants electronically on grants.gov the following publication may be useful.
USDA, NIFA Grants.gov Application Guide – A guide for the preparation and submission of NIFA applications via grants.gov:
http://www.nifa.usda.gov/funding/grant_forms/electronic_app_guide.pdf
NIFA Help Desk - Phone: 202-401-5048 (M-F 7:00 am -5:00 pm ET)
ORS grants.gov Cover Page Information:
http://www.ors.hawaii.edu/_library/documents/SF424_Instructions.pdf
UH ORS Help Desk – Phone: 956-5198 (M-F 7:45-4:30 pm HST)

**Agriculture, Rural and Community Development Grants**

**See appendix table at end for new AFRI deadline dates: http://www.nifa.usda.gov/funding/afri/afri_program_deadline_dates.html**

$ - USDA, NIFA - Children, Youth, and Families at Risk 4-H Military Partnership
**Deadline: September 1, 2010**
http://www.nifa.usda.gov/funding/rfas/cyfar_military.html

$ - Western Integrated Pest Management Center (WIPMC) - IPM Work Groups; Outreach and/or Publications; and Surveys/Crop Profiles grants
**Deadline: September 10, 2010**
http://www.wripmc.org/

$ - USDA, NIFA -Tropical and Subtropical Agricultural Research (TSTAR)
**Deadline: September 17, 2010 (required Letter of Intent)**
October 25, 2010 (full proposals)
http://www.ctahr.hawaii.edu/site/Employee/downloads/rfp/TSTAR_Full.doc
http://www.ctahr.hawaii.edu/Site/Employees.aspx ; http://www.ctahr.hawaii.edu/Site/T-STAR.aspx

$ - NSF, Dir for Biological Sciences – Basic Research to Enable Agricultural
**Deadlines: September 16, 2010 (Letter of Intent required)**
November 16, 2010 (full proposal)
http://www.nsf.gov/pubs/2010/nsf10589/nsf10589.htm?WT.mc_id=USNSF_25&WT.mc_ev=click

$ - USDA, NIFA - Agriculture and Food Research Initiative Fellowships
**Deadlines: October 5, 2010**
http://www.nifa.usda.gov/funding/rfas/pdfs/10_afri_fellowships.doc

$ - Farm Foundation
**Deadlines: October 31, 2010**
http://www.farmfoundation.org/webcontent/Farm-Foundation-NFP-Small-Grants-Program-357.aspx?z=85&a=357

$ - USDA, NIFA – Western SARE - Producer Grant (formerly farmer/rancher grants)
**Deadline: December 3, 2010**
https://wsare.usu.edu/grants/RFA/FRG_2011.pdf

$ -USDA, NIFA - Western SARE - Sustainable Agriculture Tour grants
**Deadline: applications accepted year round**
https://wsare.usu.edu/grants/RFA/TRG_2010.pdf

$ - USDA, Rural Development
Community Facilities Loan and Grant Program
**Deadline: Applications accepted on an ongoing basis**
http://www.rurdev.usda.gov/rhs/cf/cp.htm
http://www.rurdev.usda.gov/rhs/cf/brief_cp_grant.htm

## Education

$ - USDA, NIFA – Western SARE -Professional Development Program Grant
**Deadline: November 5, 2010**
https://wsare.usu.edu/grants/RFA/PDP_2011.pdf

$ - Human Frontier Science Program – Short Term Fellowship Program
**Deadline: rolling – applications accepted year round**
http://www.hfsp.org/how/appl_forms_STF.php

$ - NSF – Active Funding Opportunities
**Deadline: Multiple**
http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

## Environment, Water, Energy, Invasive Species Grants

$ - National Forest Foundation: Community Assistance Program
Local Forest Partnerships Fund
**Deadline: proposals accepted on a rolling basis throughout year**
http://www.natlforests.org/consp_05_cap.html

$ - National Geographic Conservation Trust Offers Funding to Preserve Earth's Resources
**Deadline: Open**
http://www.nationalgeographic.com/field/grants-programs/conservation-trust-application.html

## Families, Youth and Children Grants

$ - CHS Foundation
Rural Youth and Leadership Development
**Deadline: rolling – applications accepted year round**
http://www.chsfoundation.org/programs/ryld.htm

## Financial Grants

$ - Money Management International Financial Education Foundation,
Financial Education Grants
**Deadline: rolling – applications accepted year round**
http://www.mmifoundation.org/GrantSeekers.asp

$ - Hitachi Foundation: Business and Communities Grants Program
Grants Address Economically Isolated Communities
Interested organizations may submit an online inquiry to provide information about project ideas **at any time** and the Foundation's will determine if it fits their priorities.
http://www.hitachifoundation.org/grants/guidelines/index.html

## Health, Nutrition, Food & Biomedical Grants

$ - Robert Wood Johnson (RWJ) Foundation - Healthy Eating Research Announces 2010 Call for Proposals
**Deadlines: Rapid-Response Grants due September 1, 2010**
http://www.healthyeatingresearch.org/component/content/article/230

$ - Proposals Invited for Round Five of Healthy Eating Research: Building Evidence to Prevent Childhood Obesity
**Deadline: September 1, 2010**
http://www.rwjf.org/applications/solicited/cfp.jsp?ID=20922

$ - Aetna Foundation Announces 2010 Grant Program Funding Priorities
**Deadlines: Quarterly -** February 15, May 15**,** August 15, & **November 15, 2010**
http://foundationcenter.org/pnd/rfp/rfp_item.jhtml?id=288000014

$ - Robert Wood Johnson Foundation and Pew Charitable Trusts Announce Health Impact Project
**Deadline: Open**
http://www.rwjf.org/applications/solicited/cfp.jsp?ID=20921

## Science Grants

NSF – Active Funding Opportunities
**Deadline: Multiple**
http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

$ - National Geographic Society – Waitt Grants Program
**Deadline: Rolling**
http://www.nationalgeographic.com/field/grants-programs/waitt-grants-application.html

## UH, Hawaii and Regional Grants

$ - UH, University Research Council - Faculty Travel Funds
**Proposal Deadline: rolling – applications must be in >4 weeks before travel**.
http://www.hawaii.edu/urc/pdf/factravel_g.pdf
http://www.hawaii.edu/urc/pdf/factravel_f.pdf

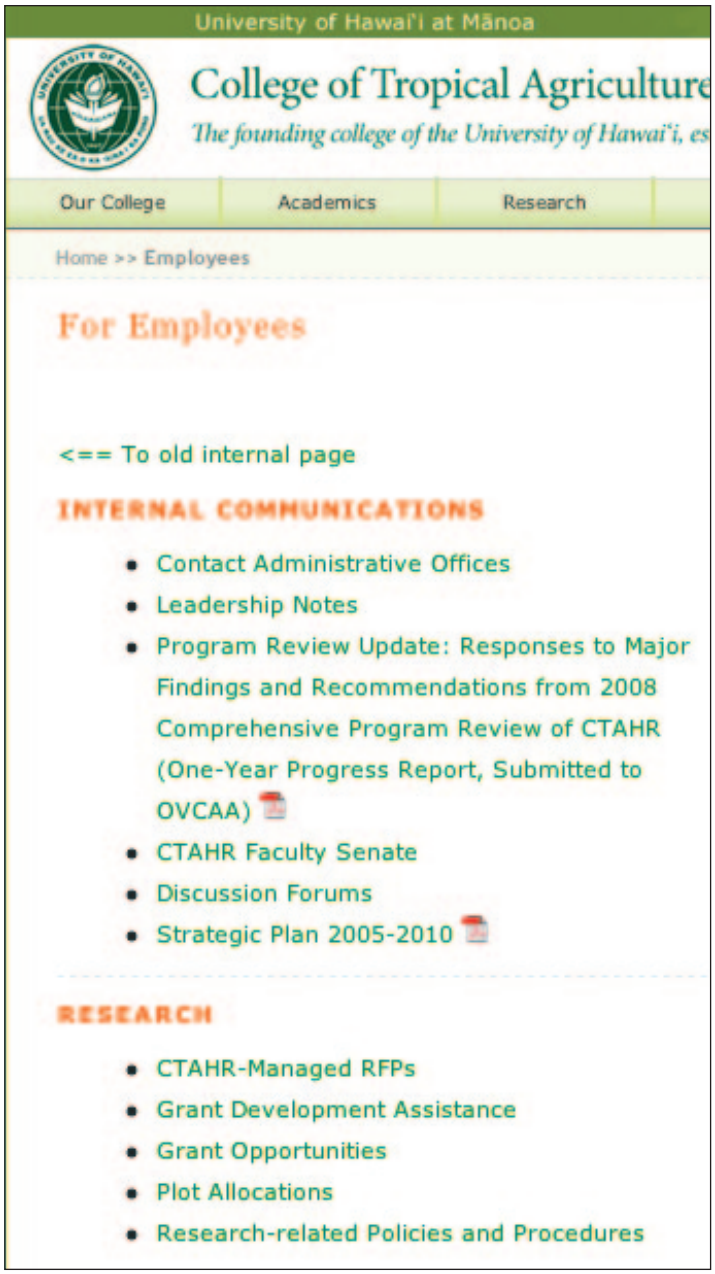
# Office of Research updates content

**By CY Hu**
**Associate Dean and Director for Research**

Check out the new information now available listing prior and current CTAHR awards under the Research Projects tab on the CTAHR Office of Research web site. Additional information continues to be added to our website to provide as much data as possible about the many accomplishments of CTAHR staff and faculty. Thanks to the effort of **Kathy Lu,** IT Specialist in the Office of Communications Services (OCS), it is now possible to click on the Extramural tab to see a listing of CTAHR awards that can be sorted by year (2005 to the present) and/or unit or Department. The name of the first investigator listed on the grant, the title, and the award amount are currently displayed and additional data or search options may be available in the future.

Improvements to the Research Office website.

More detailed information about grant writing and instructions for submitting applications for Special Grants or Formula Fund grants continues to be available on the CTAHR Employee's Page at http://www.ctahr.hawaii.edu/site/employees.aspx.



More research information behind the employee firewall.

# Successful grants for CTAHR faculty

From June 1 to August 30, 2010 as listed by UHM Office of Research Services

| Last Name | First Name | Dept | Title | Sponsor | Amount |
|---|---|---|---|---|---|
| Bruland, | Gregory Lee | NREM | Climate Change Impacts on Hawaiian Biodiversity and Fresh Water Resources: Building Capacity for Res | USDA - Forest Service | $102,306 |
| Chan-Halbrendt, | Catherine | NREM | University of Hawaii Fellowships for Integrataive Training in Sustainable Sciences (UH-FITSS) | USDA | $156,000 |
| Criley, | Richard A | TPSS | Enhancing Protea Flowering in Hawaii | Hill Memorial Foundation, Inc. | $920 |
| Fares, | Ali | NREM | Evaluation of Flash Flood Prediction Models for Small Watersheds in Tropical Islands | NOAA - Natl Weather Service | $124,999 |
| Fong, | Grace | FCS | Learning to Grow 2010-2011 | Human Services, Dept - HI | $450,910 |
| Grace, | Jack Kenneth | PEPS | Biology and Control of the Formosan Subterranean Termite | USDA | $131,136 |
| Grace, | Jack Kenneth | PEPS | Biology and Management of Invasive Termite | USDA | $175,000 |
| Hara, | Arnold H | PEPS | University of Hawaii Extension IPM 2010 | USDA | $73,818 |
| Hara, | Arnold H | PEPS | Hot Shower Treatment for Disinfesting Potted-Plants of Coqui Frogs and Other Invasive Pests | County of Hawaii | $120,000 |
| Hu, | Ching Yuan | CTAHR | Control of Minor Crop Pests and Diseases | USDA - Ag Research Svc (ARS) | $41,285 |
| Hu, | Ching Yuan | CTAHR | Management and Control of Banana Bunchy Top Virus (BBTV) Through Resistant Cultivars | USDA - ARS | $94,867 |
| Hu, | Ching Yuan | CTAHR | Environmental Effects of Tephritid Fruit Fly Control and Management | USDA - ARS | $179,744 |
| Ikeda, | Carol S | FCS | Sustainable Communities Project Through Successful Community Partnerships | USDA - CSREES | $140,000 |
| Ikeda, | Carol S | CTAHR | Keaukaha Community Resource Center | Kamehameha Schools | $55,000 |
| Kanehiro, | Naomi A | Oahu Extension | Nutrition Consultation and Review | HI Dept of Human Serv | $75,000 |
| Li, | Qingxiao | MBBE | Hair Analysis for Mercury and Arsenic Exposure | Hi Dept of HealthI | $27,000 |
| Litton, | Creighton | NREM | Effects of Mean Annual Temperature on Carbon Storage and Fluxes in Native Forests of Hawaii | USDA - Forest Serv | $89,000 |
| Litton, | Creighton | NREM | The Potential for Restoration to Break the Grass/Fire Cycle in Dryland Ecosystems in Hawaii: Using R | Agriculture, Dept - Forest Service-FED | $46,000 |
| Paull, | Robert E | TPSS | Pineapple Research | UH Foundation | $20,000 |
| Presting, | Gernot G E | MBBE | Functional Genomics of Maize Centromeres | Univ of Georgia | $256,877 |
| Sylva, | Traci Y | MBBE | Transforming Agriculture and Natural Resource Management Education to Keep Up with the Changing Indu | NSF | $658,078 |
| Titchenal, | C Alan | HNFAS | Evidence Based Research for More Appropriate Public Health Nutrition Education | Chamber of Commerce of Hawaii | $12,500 |

| | | | | | |
|---|---|---|---|---|---|
| Uchida, | Janice Y | PEPS | Survey of Phytophthora colocasiae, the Cause of Taro Leaf Blight, in Hawaii | USDA | $31,265 |
| Uehara, | Goro | TPSS | Regional Biomass Feedstock Partnership - Herbaceous Bioenergy Crop Field Trials | South Dakota State Univ | $25,000 |
| Yang, | Ping-Yi | MBBE | Evaluating an Engineered Biological Treatment Process for the Application of Aquaculture Waste and W | Oceanic Institute - Ctr for Tropical & Subtrpcl Aquaculture (CTSA) | $20,000 |
| Yuen, | Sylvia H L | COF | Services to Evaluate and Monitor Substance Abuse Service Outcomes and Process Evaluation Activities | HI Dept of Health - Alcohol & Drug Abuse Div | $234,283 |
| Yuen, | Sylvia H L | COF | Memorandum of Agreement Relating to Quality Care for Home-Based and Center-Based Child Care Provider | HI Dept of Human Serv | $517,022 |
| | | | | | |
| | | | **TOTALS** | 27 grants | $3,847,372 |

# Bulletin board – sharing the good news

**Dr. Koon-Hui Wang**
Has been appointed vice-chair for the Cobb Foundation. The Nathan A. Cobb Nematology Foundation provides all nematologists and friends the opportunity to build self-sustaining endowments for the advancement of nematology.

**Dr. B acknowledged (again!)**
Dr Jim Brewbaker picked up these awards recently:

"Life Time Achievement Award" of the National Association of Plant Breeders.

"Award of Excellence" of the American Society of Horticultural Science.

# Good things do come to an end

**Doug Vincent, Chair**
**Department of Human Nutrition, Food and Animal Sciences**

With the 50th issue of the *CTAHR Research News* magazine our "run" comes to a close. Telling our good stories – was the vision of the *CTAHR Research News*. That CTAHR had wonderful stories to tell and that we, for a variety of reasons weren't telling them. At first, we wanted to focus on the research side in CTAHR but as *CRN* evolved, we broadened the focus to tell cover important activities, including extension stories. *CRN* began in September of 2005; we introduced our "cover" stories in January 2006, and continued to put out 10 issues a year until this one. The first one was a sparse 5 printable pages. Our January 2009 edition, was our largest with a full on 33 pages. We averaged 17 pages 10 months out of 12. We featured faculty from all Departments and the Center on the Family; and faculty at all ranks – from some of CTAHR's youngest and oldest faculty members. Our cover stories were purposely written in the first person, giving the reader a personal view of these passionate faculty members. But keeping in mind, that the successes of these faculty members are never accomplished in isolation, we always wanted the "covers" to include their "teams" (colleagues, graduate students, and staff) as part of the story.

**Our 50th and Aloha issue!**

Another theme was providing support for our research community. This was done through serving as an outlet to announce recent grants and publications; through the Research Calabash and other stories to provide useful information on the research process; and tracking our overall progress through the publication and evaluation of how well CTAHR was doing with grants and contracts.

Beyond research, *CRN* tried to provide newsworthy stories – visitors to our campus, including our most recent visit by Kathleen Merrigan, the Deputy Secretary of Agriculture. But we also did news from Washington, DC; and feature stories about the Farm Fair, or changes to our buildings or experiment stations. Central to *CRN* were people; introducing and welcoming new faculty and staff members, plus bidding fond aloha to people leaving us.

Finally, *CRN* was about a group effort from the CTAHR Research Office to effectively communicate about CTAHR's research to the faculty, staff and stakeholders. I have several people to thank –first, the faculty contributors who wrote such engaging stories; **Jim Hollyer** of ADAP for prodding us to get the stories completed and for putting the publication together professionally every time; to **Kathy Lu** of OCS, for uploading the newsletter to the web site, to **Drs. Po Yung Lai**, **Sharee Pepper** and **Brian Turano** for their excellent contributions to the newsletter and lastly, to **C.Y. Hu** for his leadership in this endeavor. Personally, it was an honor and a pleasure to serve CTAHR in this way and we hope that these stories were useful to you. And the stories won't go away; they are archived on the CTAHR Research News section of the CTAHR Web site. As we pass from the scene, we remind those that follow us that CTAHR has great, wonderful, and fantastic stories to tell about important and impactful work, accomplished by enthusiastic, energetic, and exciting faculty and staff. These stories need to be told, often. Good luck and thanks. *(and, thank you, **Doug**! – ed.)*