

CTAHR Research News

December 9, 2005
Volume 1, Issue 4

In this issue

Farm Bill Listening Session	p. 2
Noni Juice: Odiferous Wonder of the Tropics	p. 3
Hawaii Coffee Makes a Comeback	p. 4
Farm Products Distribution Policy	p. 5
Faculty Output	p. 6
Tropical Fruit Research Listening Session	p. 6
New Funding Opportunities	p. 7



**CTAHR
Office of Research**
College of Tropical Agriculture
and Human Resources
3050 Maile Way
Gilmore Hall 202
University of Hawaii at Manoa
Honolulu, HI 96822 USA
ph 808.956.4142
fx 808.956.9150
research@ctahr.hawaii.edu
www.ctahr.hawaii.edu

Last year at this time, my wife and I were living out of our suitcases while our household was on its way to Honolulu. It's hard to believe December is here already, and we will celebrate our first anniversary soon! It is the time of the year when things are gradually slowing down in preparation for the holiday season, and a time when we celebrate our triumphs and share our blessings. 2005 has been an exciting year for me and for CTAHR. There were so many people to meet, and so much to learn; time just passed by so quickly.

During 2005, CTAHR hired four new faculty members: three have reported to duty, and one will join us in January 2006. Since July, we have received 114 extramural grants and contracts for a total of \$14,854,600 at end of November, with seven more months to go to the end of the fiscal year. At this rate, we should easily surpass \$16.6 million mark from last year. We just received word from Washington DC; CTAHR will be receiving \$3 million for the "replacement of research and educational materials lost and recovery of interrupted research resulting from the October 30, 2004 floods" in the 2006 Agricultural Appropriations. We are thankful for the efforts of Senator Inouye for his wonderful present to CTAHR just in time for the holiday season.

We will also be receiving a new special grant to focus on issues related to tropical fruits. You can get the latest scoop from Doug Vincent if you have further questions after reading his piece on page 6.

CTAHR's faculty work continuously with beverage research and development, and this month we spotlight noni and coffee. Scot Nelson's article educates us on the various types of noni beverage products and noni's "medicinal effects." Skip Bittenbender's article highlights the reemergence of reemergence of Hawaii's coffee industry. In future issues of the CTAHR Research Newsletter, we



Farm Bill listening session

hope to share with you on other exciting beverages such as Kava and Tea. We have not forgotten our colleagues in the Human Resources side of college. We will celebrate their success stories in the coming issues.

In preparation of drafting the 2007 Farm Bill, Mike Johanns, the new USDA Secretary, is conducting a series of listening sessions across the country. One of these sessions took place in Kona last month. You can read more details on page 2 of this issue.

In this issue, we continue to share with you the recent publications of our faculty, staff and graduate students. We love to hear from you, so please continue to submit your stories to share with others. Happy Holidays to you and your families.

CY

Farm Bill Listening Session

CTAHR receives over 10 million research dollars in federal formula funds, special grants, and competitive grants from the CSREES, an agency under the USDA. The USDA operates under the legislative language established in the Farm Bills, the most recent version being the 2002 Farm Bill. In January 2005, Mike Johanns was appointed as the new USDA Secretary, and one of his first actions was to schedule listening sessions across the nation to collect input for consideration in drafting the new 2007 Farm Bill.

"The 2007 Farm Bill will affect America's entire agricultural community, so I believe our entire agricultural community should have a say in the process. I welcome input from across the nation about what is working and what we can do to improve farm policy."
- Mike Johanns, Secretary of Agriculture.

The 2002 Farm Bill (officially entitled the "Farm Security and Rural Investment Act of 2002") authorizes many USDA programs, including farm price and income support programs. New legislation needs to be enacted prior to the bill's expiration in 2007. Thus far, 41 listening sessions have been scheduled across the nation. Recently, Hawaii hosted a session in Kona, Hawaii, on November 12, 2005, at the Sheraton Keauhou Beach Resort Convention Center.

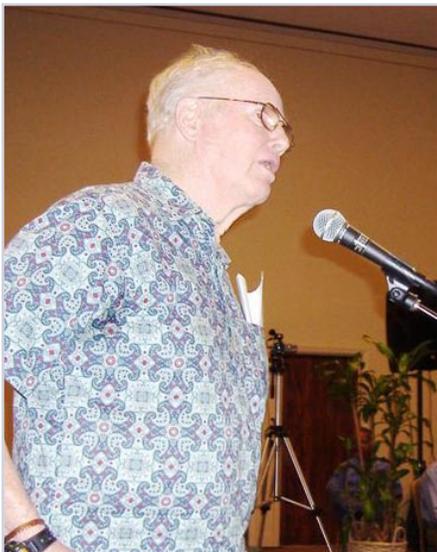
The Hawaii Farm Bill Forum was hosted by the Agriculture Under-Secretary for Rural Development, Thomas Dorr, who was joined by Merlyn Carlson,

Deputy Under-Secretary for Natural Resources and Environment. Notable attendees included Governor Linda Lingle and Congressman Ed Case.

The primary topics addressed at the forums reflect various concerns affecting rural America such as commodity, conservation, and rural economic development issues. For example:

1. How should farm policy be designed to maximize U.S. competitiveness and our country's ability to compete effectively in global markets?
2. How should farm policy address any unintended consequences and ensure that such consequences do not discourage new farmers and the next generation of farmers from entering production agriculture?
3. How should farm policy be designed to effectively and fairly distribute assistance to producers?
4. How can farm policy best achieve conservation and environmental goals?
5. How can Federal rural and farm programs provide effective assistance in rural areas?
6. How should these agricultural product, marketing, and research-related issues be addressed in the next farm bill?

Dr. Wayne Nishijima, Associate Dean and Associate Director for Extension, attended the listening session in Kona and presented a two-minute testimony for CTAHR on behalf of Dean Andy Hashimoto. In his testimony, Wayne specifically responded to how agricultural research-related issues be addressed in the next farm bill. He pointed out the importance of the formula funding to our research programs, and the need to strengthening of the formula funding for future. The complete text of his testimony can be found at http://www.usda.gov/wps/portal/!ut/p/s.7_0_A/7_0_1UH?contentidonly=true&contentid=2005/12/0527.xml



During the listening session, many stakeholders had an opportunity to be heard, including Monty Richards, a Big Island cattle rancher and current member of the CTAHR Board of Advisors.

Noni Juice: Odiferous Wonder of the Tropics

By Scot Nelson
Associate Specialist, Plant Pathology

Morinda citrifolia L., known in Hawaii as *noni*, is a small, fruit-bearing evergreen tree or shrub that grows widely throughout the tropics and is a significant source of traditional medicines, dyes and food for indigenous societies. Noni has attained significant economic importance worldwide through a variety of health and cosmetic products made from leaves and fruits. These products, including fruit juice and powders derived from fruit or foliage, are some of the most important botanical remedies and food supplements currently traded on the international market.

In 2006, the worldwide value of noni beverages and other products will exceed \$3 billion, up from a value of about \$400 million in 2001. Currently, pure noni juice (and even some noni juice drinks) retail for about \$1 per fluid ounce, making noni one of the highest profit-margin juice beverages in the world today. Although statistics are not kept on the Hawaii noni industry, my data indicate an estimated current value of at least \$10 – 15 million in 2005.

The modern applications of *M. citrifolia* as a complementary alternative medicine (CAM) span a vast array of maladies, including high blood pressure, diabetes, pain, arthritis, depression, cancer, AIDS, skin parasites, skin and stomach ulcers, arteriosclerosis, and senility. Some of these applications can be accounted for by the presence of a number of physiologically active chemicals found in *M. citrifolia*, including anthraquinones, alkaloids, scopoletin, glycosides, complex polysaccharides, asperuloide and organic acids. Despite the lack of medical research to support some of the applications, the plant's fruits and juice enjoy an outstanding anecdotal reputation as a cure-all.

The following are the main types of noni beverage products produced with Hawaiian materials and traded on the market today, available as certified organic or non-organic:

Pure noni fruit juice. Juice is either drip-extracted or pressed from ripe fruits. The current market preference is for fresh juice that is not aged more than 2 or 3 weeks. However, some consumers prefer noni juice that is aged for about 2 months. Aged noni juice undergoes an acidifying, bacterial fermentation that

results in a dark-colored juice with a pH of about 3.1-3.5, making the juice very sour and sometimes bitter. Pure noni juice should contain no added ingredients such as sugar or water, and it's usually pasteurized for human consumption.

Noni fruit juice concentrates. In juice concentrates, water is removed from pure noni juice through a vacuum process. The concentrated juice ranges from 3:1 up to 10:1 concentration. Concentrates are used to develop noni juice and juice-blend products.

Noni fruit puree beverages. The largest noni company in the world manufactures juice products from noni puree which is shipped to the US mainland and mixed with blueberry juice, resulting in a beverage that is about 15-20% noni.

Noni fruit powder beverages. Noni fruits are chopped, dried, and pulverized into a powder, which is used to make reconstituted juice beverages.

Noni tea. Fruits or leaves are chopped and dried and sold as teas.

It's easy to make your own noni juice or juice beverages at home. For tips and other information about noni, please visit the CTAHR Noni Website at www.ctahr.hawaii.edu/noni.

Scot Nelson

Hometown:
Raleigh, North
Carolina

Joined CTAHR in:
1992

**Educational
history:**
BA, History,
Pennsylvania State
University; MS,
Plant Pathology,
Texas A&M University; PhD, Plant Pathology, North
Carolina State University.



Specialization: Plant Pathology

Current work: Extension education programs for plant pathology; plant disease research on a variety of crops including coffee, noni, 'awa, koa, and naupaka.

Hawaii coffee makes a comeback

By HC 'Skip' Bittenbender
Extension Specialist for Coffee, Kava, and Cacao

In 1986, Hawaii's annual coffee production had reached its lowest point during this century. Fifteen years later, production approached the all time highs of the mid-20th century. During the intervening years, Hawaii's coffee industry has seen boom and bust, pest epidemics, coffee counterfeiters, and, of course, competition.

Coffee's rise in popularity as a production crop followed a statewide coffee variety trial completed by CTAHR in 1992. Because of this work, coffee production began on Maui, Molokai, Kauai, and Oahu, in areas formerly farmed for sugar and pineapple. Mechanization of all aspects of production and irrigation were key features in creating this agricultural boom. Loren Gautz and HC 'Skip' Bittenbender developed a mechanized pruning system using DOA funds. As a result, state

production of coffee has increased almost 500% in 15 years.

Unfortunately, the nature of commercial agriculture can be just as unpredictable as family farming. The coffee industry suffered a blow in 2000 when mechanized coffee farms on Maui, Molokai, and Oahu stopped production for several years. However, at the same time new small farms sprang up outside Kona in Ka'u, Keaau, Hamakua, and most recently, in Kula. Additionally, Kona coffee production increased as well with new acreage (a nearly twofold increase since 1995), new farmers, and new coffee pickers from Latin America. With educational workshops and other programs provided Virginia Easton-Smith and the Kona Extension Office, the coffee industry on the Big Island is booming. By 2005, many of the farms reopened with new funding



HC 'Skip' Bittenbender

Hometown: Michigan

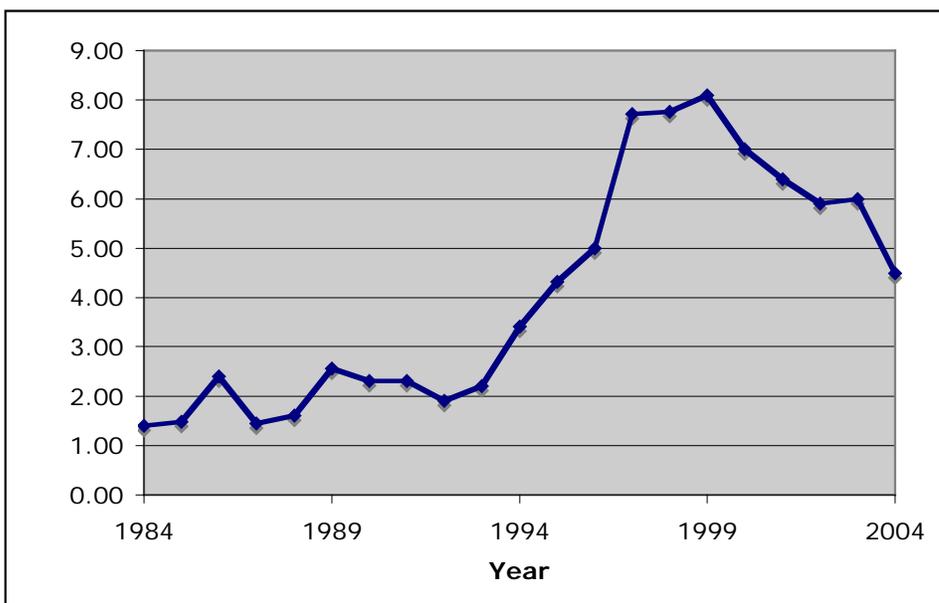
Joined CTAHR in: 1986

Educational Background: B.S., Western Michigan University, M.S., Michigan State University, Ph.D., Michigan State University.

Specialization: Crop production emphasis on beverage crops—coffee, kava, cacao

Current work: Kava production and beverage quality, mechanized coffee pruning, economics of coffee pruning, shade coffee, cacao clone and location evaluation, micro-scale cacao processing to chocolate

Green bean production, in millions of pounds, in Hawaii, from 1984 to 2004.



“As a result, state production of coffee has increased almost 500% in 15 years.”

Coffee makes a comeback, cont.

and leadership. It is expected that state coffee production will begin to rise by 2006.

The history of coffee science in Hawaii is bold and rich. It began at the Hawaii College of Agriculture and Mechanical Arts, CTAHR's predecessor, in 1907. Over the past century, we have developed practices that have greatly improved Hawaii's coffee industry. By 1950, Hawaii had the world's highest green bean yields with over 3500 pounds per acre.

Coffee research programs continue today, exploring topics such as economic analysis of traditional vs. organic coffee production; economic analysis of conventional vs. Beaumont-Fukunaga (stump) pruning; economics of mechanized pruning methods for mechanized harvesting; impact of shade-grown coffee on yield, cup quality, and chemistry; nematode control using CTAHR's 'Fukunaga' rootstock; black twig borer control; low water



Bittenbender conducting research on mechanical pruning and harvesting techniques of coffee plants on Kauai.

(demucilage) processing; waste water management; energy and labor efficient drying. CTAHR produces publications on production, new technologies, and insect and disease control, to name a few; as well as outreach programs which include coffee workshops and schools on production and cupping, and advising coffee organizations.

Virginia Easton-Smith

Hometown: Normal, Illinois

Joined CTAHR in: 1992

Educational Background: B.S. Horticulture Science, University of Hawaii, M.S. Horticulture, University of Hawaii.

Specialization: Assistant Extension Agent; Extension Programs in Tree Crop, West Hawaii

Current work: Development and expansion of diversified crop production, particularly coffee and tree fruits in West Hawaii. T-STAR funded project on the ecology and management of black twig borer on coffee in Hawaii.



Farm Products

Distribution Policy

One item that came out of the October Farm Managers' meeting on Kauai was the revision of the Farm Products Disposition Policy. A committee chaired by Trent Hata was tasked to lead this effort. They have submitted the first draft policy to the farm managers and county administrators for their review and comments. A second draft was prepared, reviewed, and approved by the dean's cabinet in a recent cabinet meeting. The final draft will be presented to the college Leadership for comments and approval at its December 21 meeting. You can find a copy of final draft of this policy at http://www.ctahr.hawaii.edu/vincent/Farm_Products_Disposition_Policy.pdf. Please send your comments to research@ctahr.hawaii.edu by December 20 so that we can work them into the final version of this policy. Thank you very much for your help.

See the newest T-STAR Video Impact Report:

Coffee Under Cover

GO TO [HTTP://WWW.CTAHR.HAWAII.EDU/T-STAR/TSTARHILITEPAGE.HTM](http://www.ctahr.hawaii.edu/t-star/tstarhilitepage.htm)

OR WATCH FOR US ON UHTV, CHANNEL 55.

Faculty Output

Publications (including books, book chapters), patents and other science-based output

Here is the latest crop of faculty offerings. As always, if you have some new output that you would like shared with others, please let me know.

Chennat Gopalakrishnan (NREM)

- Gopalakrishnan, C and Okada, N. 2005. Water and Disasters: Crafting Creative Solutions. *Water Resources Development* 21(4): 539-541
- Gopalakrishnan, C. 2005. Case Stations and Field Campuses: Toward a New Theory of Implementation, In: *Disaster Reduction and Human Security*, ed. Rajib Shaw (Paris: UNESCO & Kyoto: Kyoto University)
- Gopalakrishnan, C. 2005. Economics, Law and the Evolution of Water Management Institutions in the American West: A Survey and Synthesis. *Proceedings of the American Water Resources Association*, eds. J.K. Levy, J.E.T. Moncur, C. Liu & C.F. Ice, Honolulu, Hawaii
- Levy, J.K., C. Gopalakrishnan. and Z. Lin. 2005. Advances in Decision-Support Systems for Flood Disaster Management: Challenges and Opportunities. *Water Resources Development*. 21(4): 593-611
- Levy, J.K and C. Gopalakrishnan. 2005. Promoting Disaster-Resilient Communities: The Great Sumatra-Andaman Earthquake of 26 December 2004 and the Resulting Indian-Ocean Tsunami. *Water Resources Development*. 21(4): 543-559

Adelheid Kuehnle (TPSS)

- Obsuwan, K., Borth, W.B., Hu, J. and Kuehnle, A.R. 2005. Virus resistance in orchid plants transformed with a mutated movement gene of Cymbidium mosaic virus. *HortScience* 40: 1050.
- Kuehnle, A.R. and Amore, T. 2005. Tropical flower breeding at the University of Hawaii. *HortScience* 40: 945 (invited speaker).

- Khaithong, T. Sipes, B. and Kuehnle, A.R. 2005. Chloroplast small subunit rubisco protein is ingested by migratory endoparasitic nematodes. *HortScience* 40: 1080.
- Kuehnle, A.R. 2005. Adventures in orchid bioengineering for improved color and disease resistance. 16th biennial meeting of the New Zealand branch of the IAPTC&B, pg. 9 (Keynote address).
- Kuehnle, A.R. 2005. Lytic peptides confer disease resistance and susceptibility in the bioengineered perennial anthurium. 16th biennial meeting of the New Zealand branch of the IAPTC&B, pg. 14 (invited speaker).

Charles Weems (HNFAS)

- Y.S. Weems, R.D. Randel, S. Tatman, A. W. Lewis, D. A. Neuendorff and C.W. Weems. 2005. In vivo Progesterone Treatments Inhibit Nitric Oxide and Endothelin-1-Induced Bovine Endometrial Prostaglandin (PG) E (PGE) Secretion In Vitro. *Prostaglandins and Other Lipid Mediators*. 78:276-290.
- Weems, Y. S., E. Lennon, T. Uchima, A. Raney, K. Goto, A. Ong, H. Zaleski, and C. W. Weems. 2005. Is Nitric Oxide Luteolytic or Antiluteolytic?. *Prostaglandins and Other Lipid Mediators*. 78:141-151.

Jinzeng Yang (HFNAS)

- Zhao B, Wall RJ, Yang J. 2005. Transgenic expression of myostatin propeptide prevents diet-induced obesity and insulin resistance. *Biochem Biophys Res Commun*. 337:248-255.
- Yang J, Zhao B, Baracos VE, Kennelly JJ. 2005. Effects of bovine somatotropin on beta-casein mRNA levels in mammary tissue of lactating cows. *J Dairy Sci*. 88:2806-2812.

CTAHR Tropical Fruit Research Listening Session

Thanks to the efforts of the Hawaii Tropical Fruit Growers Cooperative and our Congressional delegation, funding has been awarded to CTAHR to support tropical fruits research. The USDA Cooperative State Research, Education and Extension Service (CSREES) Special Research Grant entitled "Agricultural Diversification" has been re-packaged to support research and development to Hawaii's tropical fruit growers. A total of \$221,000 has been appropriated for this project but CTAHR expects to receive approximately \$200,000 for new research projects in support of this industry. Doug Vincent, Special Director for Grants and Contracts, will be managing this project and we anticipate a request for proposals to be released in January, 2006. In anticipation of the RFP, CTAHR is seeking input on this new program. To enable us to craft an RFP and to provide input to the Hawaii Tropical Fruit Growers Cooperative, CTAHR will be holding a Tropical Fruit Growers Listening Session to be held on **Friday, December 16, 2005 at 10:30 a.m. in Gilmore 212**. If you have interests in this area and would like to contribute to our information gathering, please feel free to attend. If you cannot attend and would like to submit comments or questions, please send an e-mail to Doug Vincent at vincent@hawaii.edu with your comments. If you are on a neighbor island and wish to participate via Polycom, please contact Lynnet Higuchi at 956-8157 by Monday, December 12, 2005 so arrangements can be made. We look forward to your input.

New Funding Opportunities

Deadlines, deadlines, deadlines! Yet preceding every deadline is the opportunity to compete for funds. Here is the latest batch of opportunities - best of luck and please call on our office for assistance.

U.S. Departments of Agriculture and Energy
Plant Feedstock Genomics for Bioenergy: A
joint USDA, DOE Research
**Deadline for Pre-proposals: December 15,
2005**
http://www.sc.doe.gov/grants/LAB06_03.html

U.S. Department of Agriculture
Integrated Research, Education and Extension
Competitive Grants Program: National
Integrated Food Safety Initiative
Letter of Intent due: December 16, 2005
Deadline: January 13, 2006.
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1086>

U.S. Department of Agriculture
Integrated Organic Program
Deadline: December 20, 2005
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1141>

U.S. Environmental Protection Agency
Cooperative Training in Environmental
Sciences Research
Deadline: January 6, 2006
http://www.epa.gov/nheerl/about/files/nheerl_solicitation_1105.pdf

U.S. Department of Agriculture
Agricultural Plants and Environmental
Adaptation, NRI
Deadline: January 10, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1117>

U.S. Department of Agriculture
Biobased Products and Bioenergy Production
Research, NRI
Deadline: January 12, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1073>

National Institutes of Health
National Center for Complementary and
Alternative Medicine
Collaborative CAM Research Development
Capability Enhancement Grant at Minority-
Serving Institutions (RO3).

Letter of Intent due: January 16, 2006
<http://grants.nih.gov/grants/guide/pa-files/PAR-06-075.html>

U.S. Department of Agriculture
Water and Watersheds, NRI
Deadline: January 19, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1135>

U.S. Department of Agriculture
Soil Processes, NRI
Deadline: January 19, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1129>

U.S. Department of Agriculture
Nanoscale Science and Engineering for
Agriculture and Food Systems, NRI
Deadline: January 19, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1111>

U.S. Department of Agriculture
Rural Development, NRI
Deadline: February 1, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1127>

U.S. Department of Agriculture
Higher Education Challenge Grants
Deadline: February 2, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1082>

U.S. Department of Agriculture
Developmental Processes of Agricultural
Plants, NRI
Deadline: February 7, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1116>

U.S. Department of Agriculture
Agricultural Plant Biochemistry
Deadline: February 7, 2006
<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1115>

Correction:

In the November edition of the CTAHR Research News, our article about the flood indicated that the “CTAHR’s existing emergency preparedness plan stated that the Associate Dean and Associate Director for Extension would take over the leadership in responding to the flood.” This was incorrect. The plan lists a “CTAHR Emergency Preparedness Committee.” The Assistant Director for Cooperative Extension and County Programs (equivalent to Dr. Brennan’s position) was listed first among the committee members along with the Director of Planning and Management Systems (Walter Harada) and the Director of Administrative Services (Ruddy Wong) but was not required to “take over the leadership in responding to the flood.” Rather, the committee, along with other CTAHR administrators, provided the leadership for CTAHR in reacting to the flood. Any implication that Dr. Brennan did not do his duty nor participate in the recovery was unintentional. We apologize for this error.

Coming up next!

In the January issue of CRN we will be profiling another set of faculty and staff from the Human Resources side of CTAHR. We will also provide you a summary on CTAHR proposal submission and grant intake during the first half of the fiscal year. Space permitting, I would like to discuss the merit of formula funding. As we are reaching the end of another year, wish you and your families have an enjoyable holiday season! See you next year!

CY Hu