The 30th Annual Meeting and Symposium of the Philippine American Academy of Science and Engineering

by Onofre T. De Jesus and Maria Luisa A. Virata-Theimer

The Philippine-American Academy of Science and Engineering (PAASE) is a professional association of scientists and engineers of Philippine descent who are in the forefront of scientific research in their respective disciplines in the United States, the Philippines and other countries. PAASE was founded on April 23, 1980 in the state of Indiana by 27 founding members led by Dr. Severino L. Koh, a mechanical engineering professor then based at Purdue University. Over the years, its membership has now grown to 225 scientists and engineers. The principal objective of PAASE is to use the expertise and professional stature of its members to help improve the state of science and technology in the Philippines. Specific objectives are (1) to promote the advancement of Philippine science, engineering, and technology, (2) to encourage collaborative work among scientists and engineers of Philippine descent in research and development through scholarly and scientific endeavors, (3) to support efforts that advance science and technology, and (4) to recognize and honor the achievements of member scientists and engineers.

PAASE President Onofre De Jesus introduces University of Wisconsin-Madison Provost Paul DeLuca at the opening of APAMS 30. (photo credit: Celso Barrientos)

PAASE holds a general meeting and scientific conference once a year. The first meeting was held at the Silahis International Hotel in Manila in 1981 with Dr. Edward Teller, considered the "father of the hydrogen bomb", as the plenary speaker. From 1982 to 1997, the PAASE annual meeting was held every year, except in 1984 and 1989, mostly in the United States. In 1993, the PAASE annual meeting was held at the Department of Science and Technology in Metro Manila. The PAASE annual meeting returned to the Philippines in 1998 and 2000. Beginning with the annual meeting held at the Manila Hotel in 2003, the venue of the annual meeting has alternated between the United States and the Philippines.

This year's 30th Annual PAASE Meeting and Symposium (APAMS 30) was held at the Health Sciences Learning Center of the University of Wisconsin in Madison, Wisconsin on May 28-29, 2010. This year's conference theme was "Science and Engineering for a Sustainable Prosperity".

At the opening of APAMS 30, University of Wisconsin-Madison Provost Paul DeLuca welcomed PAASE members and described the university and its contributions to the state, nation and the world at large. UW-Madison, the flagship campus of the University of Wisconsin System, has, for several decades, consistently ranked in the top 5 in the United States in terms of the budget of its research enterprise (~$1B this year).

The featured speaker of Plenary Session A was Dr. Terence Barry, a senior scientist doing aquaculture research at UW-Madison. Dr. Barry served as an US-AID consultant on

aquaculture in Iloilo in the 1980s. He spoke on sustainability issues particularly the ever-increasing need for clean water. He recounted his experiences in Philippine aquaculture and also described his current aquaculture research and his start-up company that markets small- and large-scale proprietary water purification systems.

This year's annual meeting had two plenary sessions and eight topic sessions featuring 26 oral presentations. The diversity of scientific disciplines showcased in these presentations illustrates the breadth of the expertise of the PAASE members.

The Severino and Paz Koh Lectureship Award for Science lecture was to be given by Dr. Rigoberto Advincula (U Houston). However, this lecture had to be postponed for the next PAASE annual meeting because Dr. Advincula underwent an emergency surgery in Manila a few days prior to the meeting. In its place, two talks were given, one by Dr. Carlito Lebrilla (UC Davis) and another by Dr. Ben de Lumen (UC Berkeley). Dr. Lebrilla discussed the use of mass spectrometry in identifying aberrant glycosylation patterns as cancer biomarkers and the promise this technique holds in the early diagnosis of various cancers. Dr. de Lumen provided insights into the cancer preventive properties of soy and identified a novel peptide, lunasin, as the bioactive agent underlying soy's beneficial cancer preventive action.

Session 1: Multidisciplinary Approaches to Environmental Studies included papers on (1) optical sensors for biotechnology, biomedicine and the environment (Dr. Leah Tolosa, U Maryland, Baltimore County), (2) the fate and transport of emerging environmental contaminants, mainly pharmaceutical and industrial wastes, to establish a science-based risk assessment (Dr. Diana Aga, SUNY-Buffalo) and (3) a new framework to improve experimental design and data analysis of molecular biological techniques to establish reasonable cause-effect relationships (Dr. Francis de los Reyes III, No. Carolina State U).

Session 2: Understanding Health and Disease included papers on (1) the analytical chemistry of human milk oligosaccharides aimed at understanding their impact on infants especially those at risk because of premature birth (Lorna de Leoz, UC Davis), (2) understanding the role of dopamine D1-like receptor function in hypertension-induced renal injury using a transgenic mouse model (Dr. Crisanto Escano, Jr., Children's National Medical Center, CNMC), (3) understanding the transmission risk of parvovirus B19 from blood transfusions by a timed molecular analysis of B19V DNA and anti-B19V IgG titers of recipients and linked donors (Dr. Liza Virata-Theimer, US FDA), (4) understanding the molecular basis of dopamine D3 receptor function in natriuresis using a knockout mouse model (Dr. Van Anthony Villar, CNMC), (5) "de-antigenization" as an approach to vaccine development directed against a current Philippine influenza H3N2 strain (Dr. Giselle Concepcion, UP Marine Science Institute) and (6) understanding the role of renal dopamine D5 function in hypertension and salt sensitivity using a knockout mouse model (Dr. Larry Asico, CNMC).

Session 3: Advances in Sustainable Biotechnology had papers presented on (1) the design and testing of a low-cost mixed mode solar dryer for microalgal biomass as a sustainable biofuel source (Neil Lopez, De La Salle U) and (2) the use of activated charcoal derived from coconut wastes for use in water purification (Dr. James Patrick Abulencia, Manhattan College).

Session 4: Climate and Climategate I included papers on (1) global and Philippine initiatives involving forests to mitigate climate change through carbon credit trading (Dr. Gil Mendoza, U Illinois-Urbana), (2) the pros and cons of geoengineering strategies to mitigate climate change (Dr. Joey Comiso, NASA) and (3) the controversies clouding climate change known as "Climategate" (Dr. Joey Comiso). A talk presented after this session described the proof-of-concept validation of a low-cost label-free nano-electronic sensor for a breast cancer marker, HER2/neu (Dr. Romel Gomez, U Maryland, College Park).

The first day of APAMS 30 concluded with the traditional dinner/banquet held at the Bestwestern Inntowner Ameche Ballroom. Dinner was preceded by a cocktail reception. Provost DeLuca and his wife, Florence, and Dr. Barry and his wife, Amy, were dinner guests. A special after-dinner talk was given by Dr. Ruby Paredes on "Filipino Ilustrados". Dr. Paredes is Asst. Vice Chancellor for Diversity and Climate at UW-Madison. She received both BA and BS degrees from UP-Diliman and a PhD in history from the University of Michigan-Ann Arbor. After Dr. Paredes' enlightening talk, membership certificates were presented to 4 new members namely, Drs. James Abulencia, Diana Aga, Roberta Morales, Edwin Tecarro. A short film presentation featuring DOST Secretary and PAASE member, Dr. Estrella Alabastro, describing the Balik-Scientist Program, was shown before the gathering ended.

The second day of the annual meeting opened with Plenary Session B featuring the Severino and Paz Koh Lectureship Award for Engineering presented to Dr. Danilo Romero. Dr. Romero was introduced by Dr. Comiso, who enumerated Dr. Romero's achievements on which his selection for the award was based. In his lecture, Dr. Romero discussed the electronic structural basis of novel organic photovoltaic materials and their fabrication as low-cost, efficient and flexible materials for solar cells and their promise in harvesting solar energy, which, quoting from Dr. Ernie Terrado (World Bank), is "free but it ain't cheap".

The two speakers in session that followed, Session 5: Process Modeling and Superconductors, were, appropriately, former students of Dr. Romero at UP-Diliman. Both spoke on the positive influence Dr. Romero had in their education. The talks were on (1) mathematical modeling of mutually antagonistic signaling pathways in the embryonic development

2010 Koh Lecture Awardee for Engineering, Dr. Danilo Romero, lectures on photovoltaic device technology. (photo credit: Florence Cua-Christman)

of the African clawed frog, *Xenopus laevis,* using linear stability analysis and bifurcation theory (Dr. Edwin Tecarro, U Houston) and (2) high resolution measurement of sub-peak structure of the superconductor MgB_2 at 0.020 ^oK and studies on graphene (Dr. Roberto Ramos, Drexel U).

Session 6: Climate and Climategate II included papers on (1) practical approaches to mitigating global warming by reducing one's personal carbon footprint (Dr. Lino Blanche, USDA), (2) sea-level rise due to land subsidence resulting from excessive groundwater extraction contributes more to flooding and tidal incursion in Metro Manila and other locales than polar cap melting by global warming (Dr. Kelvin Rodolfo, U Illinois-Chicago), and (3) the operational environmental satellite systems for weather forecasting of the U.S. NOAA and its history and current status (Dr. Celso Barrientos, US NOAA).

A Panel Session on DOST Balik-Scientist Program (BSP) led by Drs. Al Albano (Bryn Mawr College) and Asec and Balik-Scientist program director, Malou Orijola was held as a working lunch to enable more people to participate. Panel discussants were Drs. Giselle Concepcion, Kelvin Rodolfo and Joey Comiso. Because BSP participation is wholly consistent with PAASE's objectives, PAASE has played a significant role in the revival and improvement of BSP and is a major stakeholder in the continued success of BSP. Asec Orijola asked prospective PAASE Balik-Scientists for patience and understanding and not to be discouraged by potential procedural disincentives in the application process. At the same time, it was pointed out that greater transparency, consistency and flexibility in BSP are needed to make the program more attractive.

Session 7: Cancer: Mechanisms, Diagnosis, Prevention and Treatment included presentations on (1) a program for continued discovery of marine biomolecules in marine microorganisms for biomedical applications (Dr. Giselle Concepcion), (2) the genetic basis of lung cancer focusing on nicotinic receptor subtypes a5, a3 and b4 (Ma. Reina Improgo, U Massachusetts), (4) engineered transgenic moss that express enzymes involved in the biosynthesis of anticancer drug paclitaxel as an alternative precursor source to yew leaves (Dr. Aldwin Anterola, So. Illinois U).

Session 8: Science Research and Education had presentations on the teaching of chemistry concepts through laboratory experiments related to practical real world scenarios (Dr. Lulu Herold, Indiana U of PA) and (2) communicating science to the lay public to influence perception in order to facilitate acceptance of science-based solutions to societal problems (Inez Ponce de Leon, Purdue U).

The last part of meeting was the annual PAASE business meeting chaired by BOD Chair Dr. Liza Virata-Theimer and co-chaired President OJ De Jesus and Vice-President Giselle Concepcion. Nominations for Vice-President 2011/President 2012 and board members (3 positions for the term 2011-2013) were received. Email balloting is scheduled later this year. The next annual meeting and symposium is scheduled to be held at the newly constructed National Science Complex located in the University of the Philippines in Diliman in mid-June 2011 and to be hosted by Dr. Giselle Concepcion, who will be the 2011 PAASE President. PAASE was instrumental in securing government funds for building the National Science Complex.

The book of abstracts for this meeting can be viewed at www.paase.org. **PSL**