

 **SCIENCE**
and
TECHNOLOGY **POST**

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SECRETARY MARIO G. MONTEJO

**The man
and his vision**

2010 NATIONAL SCIENCE AND TECHNOLOGY WEEK AWARDEES

Outstanding Technology Commercialization Award (Gregorio Y. Zara Medal)

Awardees:

Drum Seeder: ATS Development and Commercialization

Eulito U. Bautista, *Philippine Rice Research Institute (PhilRice)*

Tissue Culture System for Banana

IPB Banana Tissue Culture Project Team

Lilian F. Pateña (Project Leader)
Crop Science Cluster, College of Agriculture, University of the Philippines, Los Baños

Outstanding Research and Development Award

1. Basic Research
(Eduardo A. Quisumbing Medal)

Awardee:

“Mapping of Quantitative Trait Loci using a Doubled-Haploid Population from the Cross of *Indica* and *Japonica* Cultivars of Rice”

- Victoria C. Lapitan
- Edilberto D. Redoña
- Toshinori Abe
- Darshan S. Brar

Plant Breeding and Biotechnology Division, Philippine Rice Research Institute (PhilRice)

2. Applied Research
(Julian A. Banzon Medal)

Awardee:

“Development and Application Of Two-Dimensional Finite Volume Flow and Sediment Transport Model for Rivers and Reservoirs”

Guillermo Q. Tabios III, Ph.D.
Civil Engineering Institute of Civil Engineering, University of the Philippines Diliman

Outstanding Science Administrator Award (Dioscoro L. Umali Medal)

Awardee:

Caesar A. Saloma, Ph.D (Physics)
College of Science, UP Diliman

2010 PGCHRD-GRUPPO Medica Award for Outstanding Research in Herbal Medicine

3rd Prize – **UP Diliman**

Student: Janel Kristine Marie R. Tarin
Adviser: Dr. Christine C. Hernandez

3rd Prize – **San Pedro College, Davao City**

Student: Dawn Emerald Q. de los Santos
Adviser: Fatima May Tesoro

Consolation Prizes

• **UP Diliman**

Student: Finella Marie G. Leonido
Adviser : Dr. Christine C. Hernandez

• **San Pedro College**

Student: Kristine L. Jao
Name of Adviser: Dean Adelina C. Royo

• **UST**

Student:
Ms. Rose Anne H. Paglinawan
Adviser: Assoc Prof. Librado Santiago

Gawad LIDER Award

Gawad LIDER Exemplary Leadership-Institution Category

Awardee:

- **UP-National Engineering Center**

Gawad LIDER Exemplary Leadership-Individual Category

Awardee:

- **Dr. Simon L. Chua**
President, Mathematics Trainers' Guild

Gawad LIDER Innovation

Awardee:

- **Dr. Fortunato T. Sevilla III**

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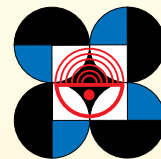
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Telefax: (02) 837-7520
Tel No.: (02) 837-2071 to 80 local 2148
Email: dost_stii@yahoo.com;
stpost@dost.gov.ph

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National Science and Technology Week 2010 Keynote Remarks

THE THEME for this year's National Science and Technology Week (NSTW), "Filipinnovation: The Way Forward," represents the policy direction of this new administration. More importantly, the theme provides the impetus for my vision for the science community because I believe we can bank on the many advances that have been made in the past years.

If the climate for innovation is conducive, we can count on our research and development sector to support and work with local firms to come up with products, services, and technologies that are competitive. Let me assure you that there is money in innovation.

With more than 20 years experience of being a techno entrepreneur, my business model has been very simple.

Naghahanap lang ako ng imported products that I can manufacture at a lower cost. I first tried this with the well screen,

which is used by well drilling industries. After designing the equipment, I developed a manufacturing process that enabled me to produce water well screens at a lower cost. Because my products are at par with imported ones, I was able to eventually capture a lion's share of the market. There was even a time when our factory, then with 80 employees, was open 24/7.

At pumasok kami sa marami pang produkto, using the same formula – developing our own equipment to manufacture products that are at par with imported ones, but at a cheaper price.

Eventually, I found out that our innovations were not only competitive locally, but also in the world market.

There was a time when a big foreign company approached me. They were surprised that we have a robotic car park, which is my latest invention, here in the Philippines. They were even more surprised

when they found out that my price was 50 percent less than their lowest.

With my first hand experience, I can attest to the claim that local innovation really works. Kaya masasabi ko rin na napakaganda ng theme ngayon na "Filipinnovation." Science and technology should be for the benefit of the people. Dapat maramdaman ng mga Pilipino ang ginagawa natin. Let me tell you how we intend to do it in the Department of Science and Technology (DOST).

First, we will develop a new tracking system for the Philippine Atmospheric, Geophysical, and Astronomical Services Division (PAGASA). It will complement the current setup of the Agency. By our estimates, it will be operational in a couple of weeks. We are very confident that through this short-term project, we will be able to improve the accuracy of tracking typhoons. Also, we intend to improve our communication strategy with the public by providing hourly weather



updates. These are just some of our interim programs. We have also prepared medium-term goals for PAGASA.

Second, we will strengthen our flood monitoring system. I hope you are familiar with the Effective Flood Operation Control System (EFCOS). This flood monitoring system used to be with the Department of Public Works and Highways and was later turned over to the Metro Manila Development Authority. It was, however, not operational during Typhoon Ondoy.

We are happy to report to you that we have done some improvements on EFCOS. About five of its rain gauge sensors have been fixed. Also, we have been able to provide a communication link between the Advanced Science and Technology Institute and the Meteorology Department of the University of the Philippines. This has enabled real-time updates on the water level along the Pasig-Marikina River section. After the five, we will replace all the 18 sensors in the area. In the next one to two years, we plan to roll out this flood forecasting system all over the country's major rivers. Ano ang impact nito sa tao? With this, we will be able to provide two-hour lead-time on our flood forecast. This can translate to lives and properties saved, especially for those living near the rivers.

Third, we are currently developing a proposal for a flood control structure in the Pasig-Marikina River section. We envision this as a possible solution to flooding in the area, as was experienced during typhoon Ondoy. This will be presented to the national government for consideration.

Fourth, we intend to put together a

local mass transit system. The concept is much like the LRT and MRT, but ours will cost only one-fourth to one-fifth of the imported price. Sana with this, we can improve the mass transit system and make it more viable. Hopefully, through this, we will be able to

solve traffic and pollution problems currently encountered by Manila and other cities.

Fifth, we would like to solve the dengue problem. This is where we are excited. We plan to do this in two ways, one through low-cost and another through high technology.

Sixth, we want to join the fight against malnutrition. Wala nang ibang programa that has a higher cost-benefit ratio than solving malnutrition, especially for infants between one and two years old. I would like to note that DOST programs on this are quite commendable.

Seventh, we want to harness wind technology. Our aim is to locally develop windmills, which will cost much less than what is available in the market. Hopefully, this will make windmills a more viable alternative energy source.

Eighth, we would like to make our own Precinct Count Optical Scan machine that we can offer to the Commission on Elections. If we are able to build a system that will cost only Php2 billion, we can create Php5 billion in savings. Even with just this, we will be able to justify our existence.

What we do in the DOST should not be confined to ourselves. Dapat itong malaman at pakinabangan di lamang ng iilang tao kundi ng higit na nakararami nating mga kababayan.

Developing local innovative capability shall be the hallmark of my administration. This will help us position ourselves favorably in strategic niches. Let us use every possible instrument, such as the NSTW, to make our fellow Filipinos know that LOCAL TECHNOLOGIES WORK.

In closing, I would like to emphasize that we all have a job to do. Given the full range of scientific applications, each of us should come up with our own technological breakthroughs. We need to make sure that what we do will have an impact on the economy and, most especially, on the Filipino people.

By linking what we do with the realities of everyday life, I believe that we will be able to gain public support. As was said by National Scientist Gelia Castillo, "science should serve a human purpose." That simple line defines everything that we are



supposed to do.

It is my sincere hope that the events and activities planned for the National Science and Technology Week lead us closer toward the attainment of our overall theme. Together, let us drive Filipinnovation into one coherent, forward direction.

Former DOST Sec. Ceferino L. Follosco is M&E's Man of the Year

By FRAMELIA V. ANONAS
S&T Media Service, STII

DR. CEFERINO Follosco bagged this year's Man of the Year Award of the metals and engineering industry held June 17, 2010 at the Heritage Hotel in Pasay City. Follosco was chosen from among six major awardees in this year's M&E Conference organized by the Metals Industry Research and Development Center of the Department of Science and Technology.

Other major awardees include Jimmy Chan of Maximetal Industries, Inc as 2010 Tool and Die Maker of the Year; Philip Tan of Wellmade Motors and Development Corporation as 2010 Metalworker of the Year; Wellington Tong of Pag-asa Steel Works, Inc as 2010 Steelmaker of the Year; Gregorio Coronel of Atlantic Gulf and Pacific Co. of Manila as 2010 Welder of the Year; and Follosco as 2010 Fabricator of the Year.

"I have already retired three times," Follosco said, "but I still like to offer my services to the sector that made me grow." He also teased about the plaque he received, as it was made of plastic. "MIRDC should have prepared something made out of its own technology," he quipped before the laughing audience who realized the wisdom of his observation.

Follosco was DOST Secretary in 1989 to 1992. He implemented a modernization strategy for the country's industrial and agricultural systems through the adoption of "leading edge technologies." The strategy included selection of sectors on the basis of potentials in terms of increased production, increased value added, and capacity to expand local production. He was also responsible in reorganizing the MIRDC and helped

establish the Design Engineering Center Foundation, Inc.

Currently, he chairs the C.L. Follosco Group of Companies which has 10 subsidiaries. He started his career as service engineer and later had a hand in the assembly and development of various types of agricultural machinery. He also headed a team that produced the "Ford Fiera," the first Asian Utility Vehicle which was exported to various countries.

The 2010 M&E Man of the Year Awards is based on the following criteria: important contributions to the M&E industry, proven leadership qualities, integrity and commitment to highest professional standards, and professional advancements and experience.



From left: Jimmy Chan, Representative of Gregorio Coronel, Philip Tan, Dr. Ceferino Follosco, and Wellington Tong

GMA confers Santos Ocampo National Scientist rank

PRES. GLORIA Macapagal Arroyo conferred Dr. Perla Santos Ocampo, a medical doctor specializing in pediatrics, the rank of National Scientist on June 25, 2010 at the Heroes Hall in Malacañang Palace. The National Scientist rank is the highest honor accorded to a Filipino scientist based on his/her contributions to science and technology.

Dr. Santos Ocampo is recognized for her significant contributions as medical educator, administrator, and institution builder at the University of the Philippines Manila. She established the first pediatric fellowship program in UP Manila and developed academic programs to enhance pediatrics in the country.

While Chancellor of UP Manila, she led the establishment of the National Institutes of Health in 1998 through RA 8503, including the National Graduate School for the Health Sciences and the National Telehealth Center. She also served as president of various pediatrics and medical organizations.

Dr. Santos Ocampo is recipient of many local and international awards and recognition. In 1994, she was named Academician by the National Academy of Science and Technology – Philippines. (*Framelia V. Anonas, S&T Media Service, STII*)



ASTI-DOST, Ateneo and UP power up PsciGrid to support education and research

NOW USERS from remote locations can conveniently access and share science information through the combined computing resources of three institutions known for their advanced information technology infrastructure. Dubbed the “Philippine e-Science Grid” or PsciGrid, the beefed up infrastructure is the product of the combined resources of Department of Science and Technology’s Advanced Science and Technology Institute (ASTI), University of the Philippines Computational Science Research Center (UP-CSRC), and Ateneo de Manila University School of Science and Engineering (AdMU-SoSE).

PsciGrid is the Philippines’ first national e-science grid infrastructure, allowing distributed computing, data, and storage resources to be shared among users from remote locations. It uses a high speed network called Research and Education Network intended mainly to support research and education, or scientific investigations such as studies on climate change and drug discovery.

The combined power of ASTI, Ateneo, and UP for PsciGrid totals 33 compute nodes, equivalent to 200 central processing units, 12.5 terabytes of disk space, and 509 gigabytes of memory.

During PsciGrid’s launch on July 2, DOST Undersecretary for Research and Development Graciano Yumul, Jr. hailed ASTI for this milestone and stressed its importance in collaborative scientific R&D which is marked by the working together of technology, people, and resources.

“Technologies make it possible for us to undertake cross-regional and cross-institutional cooperation,” he said. “With technology, people are able to share knowledge and expertise virtually, as well as combine resources to make things happen.”

“Resource-sharing enables the optimization of individual resources that are connected together in a single network,” he added.

Meanwhile, Denis Villorente, ASTI Director, underlined the need to promote grid services to the local scientific community who can benefit from this technology, and encourage local researchers and scientists to enhance their research collaboration with their counterparts abroad.

ASTI, DOST’s lead research and development institute in ICT and Microelectronics, earlier established the Philippine Research, Education and Government Information Net-

work or PREGINET, a nationwide broadband network that interconnects academic institutions, government offices, and research and development offices in the country.

Grace Dy Jongco, project leader of the Grid-Infra Project, describes this milestone as very important because “our S&T community needs to work together in harnessing ICT infrastructures fully for the benefit of our local research and development.” She also said that, through the PsciGrid, local researchers will be able to participate in cutting-edge collaborative scientific research that aims to address global problems.

During the launch, the PsciGrid team demonstrated different applications running on PsciGrid, including an application for earthquake simulation named SPECFEM3D Globe, which can be used by DOST’s Philippine Institute of Volcanology and Seismology (PHIVOLCS).

Also demonstrated was AutoDock Vina which is used for drug discovery, molecular docking, and virtual screening. ASTI also showcased its new Stereoscopic 3D Visualization Facility that enables 3D visualization and presentation of scientific data, such as molecular interaction. (*Jelina Tetangco and Framelia V. Anonas, S&T Media Service*)

Bohol's S&T director is 2009 Outstanding PSTD

SEC. ESTRELLA Alabastro awarded Engr. Marcial Tanggaan, director of Provincial Science and Technology Center (PSTC)- Bohol, the 2009 Outstanding PST Director on June 28, 2010 at the Department of Science and Technology. Tanggaan was selected by the DOST-Central Office PRAISE Committee out of four shortlist nominees.

According to Dir. Elizabeth Fontanilla of the Administrative and Legal Services and chair of the DOST-CO PRAISE Committee, award selection was based on performance, innovation/creativity, exemplary behavior, and linkages/networking.

The Committee gave due recognition to Engr. Tanggaan's innovation and creativity when he led the Provincial Food Safety team, the first of its kind in the country, which resulted in the creation of the Bohol Food Safety and Packaging Facility, an initiative duplicated by other PST Offices. The team educates owners and staff of various restaurants, fastfoods, and resorts in the province on proper food handling. Tanggaan organized the multi-sectoral food safety team to help ensure food quality and safety in Bohol, a fast-becoming tourist destination in the country.

Tanggaa also led Bohol manufacturers to form Bohol Profood, an organization



In photo (L-R): Asec. Carol Yorobe, Dir. Elizabeth Fontanilla, Sec. Estrella Alabastro, Engr. Marcial Tanggaan, and DOST Region 8 Director Burt Llanto.

of Bohol ethnic food manufacturers. This initiative not only promoted Bohol's traditional food favorites but also opened economic opportunities for employment and manufacturing in the island-province.

Moreover, Tanggaan's dedication beyond duty was shown when he continued to provide technical and management support to Total Woodkraft, a beneficiary of DOST's Small and Medium Enterprises Technology Upgrading Program (SETUP), even after the owner died and nobody in the owner's family had no capability to run the business.

Total Woodkraft has become a success story with only Tanggaan and DOST's support guiding the orphaned family in running the business.

Tanggaa likewise organized the 250-strong DOST Scholars Association of Bohol which serves as DOST's network in information dissemination and monitoring of scholars. The Association set up a common fund that allows scholars to borrow money in emergency situations. **(Framelia V. Anonas, S&T Media Service, STII)**



The Outstanding Young Scientists, Inc (OYSI) 5th Annual Meeting and Scientific Convention held July 13, 2010 at the Manila Hotel had the theme "Meeting the Challenges of Natural Resource Management. This year's awardees are Dr. Eufemio T. Rasco, Jr. of the Ministry of the Philippines Mindanao and Dr. Rodel D. Lasco of the World Agroforestry Centre.

RP delegation to 51st IMO reaps silver, other awards

By MARK IVAN C. ROBLAS
Information Officer, SEI

ST. JUDE Catholic School's Carmela Antoinette S. Lao became the first Filipina to win silver in the International Mathematical Olympiad during its 51st edition recently. It's only the country's 2nd silver finish in the world's most prestigious mathematics contest after a drought of 21 years.

She also made history last year as the first Filipina to win bronze at the 50th IMO.

Mathematical Society of the Philippines' Dr. Ian June Garces who led the Philippine delegation to the IMO said Lao got a total score of 21 points to earn a silver medal.

Lao's teammates including Henry Jefferson Morco of Chiang Kai Shek College, and Zheng Rong Wu of Zamboanga Chong Hua High School got honorable mentions in the same contest.

The three were selected from over 2,800 high school students nationwide who participated in the Philippine Mathematical Olympiad. PMO's top 20 finalists were trimmed down to three after undergoing rigorous training through the Mathematical Olympiad Science Camp, a month-long summer training held at Ateneo de Manila University.

"The last time we had a silver was in 1989, courtesy of Jerome Khohayting. For the first time, all members of the Philippine team are bringing home honors," Garces said.

He added that the individual wins of the Philippine team has put the country ahead of other nations with six students sent to the IMO, and is the best Philippine performance in the IMO so far. The Philippines ranks 74th among countries that joined the IMO, an improvement from last year's 78th ranking.

"The gold, silver, and bronze medalists are the top half of the participants, and they are in the ratio 1:2:3. The cut-off score for gold is 27, for silver is 21, and for bronze is 15. There are 517 participants from 96 countries and territories," he added.

Garces, an associate professor of mathematics at AdMU, guided the RP team together with deputy team leader Glen Mackenzie S. Ong, a math enthusiast and former Philippine contestant to the IMO.

The Department of Science and Technology's Science Education Institute and MSP supported the country's participation in the IMO and MOSC.

Dr. Fidel R. Nemenzo heads MOSC. Garces and Ong were assisted by Alva Benedict C. Balbuena of UP-Diliman, Rey A. Barcelon of Misys International Banking System, Dr. Job Nable, and Winfer Tabares of AdeMU.

"We are very proud of our students who brought home honor for our country. They are our precious resources which we will continue to nurture through our various programs," SEI Director Ester B. Ogena said.

Ogena said SEI will continue to support gifted students in science and mathematics. "We will be on a continuous lookout for gifted students who can be trained and exposed to local and international competitions to further hone their skills," she said.

Ogena expressed hope that the RP team's strong performance in the 51st IMO could inspire more students to pursue science and technology careers.

"The Philippines needs our gifted students to pursue S&T careers and enhance the development of the country to an innovation center," she said.

The 52nd IMO will be held in Amsterdam, The Netherlands in 2011.



L to R: Team Leader Dr. Ian June L. Garces, Honorable Mention awardee Henry Jefferson C. Morco, Silver Medalist Carmela Antoinette S. Lao, Honorable Mention awardee Zheng Rong S. Wu, and Deputy Team Leader Mr. Glen C. Ong

DOST honors 271 top scholar-graduates

By MARK IVAN C. ROBLAS
Information Officer, SEI

A SPECIAL tribute to 271 outstanding students who completed their college and post-graduate education for the school year 2009-2010 through scholarship programs under the Department of Science and Technology was one of the highlights of this year's National Science and Technology Week celebration.

The top science scholars received medals for superior academic performance during the "In Touch with Excellence" awarding program held at Diosdado Macapagal Hall of Land Bank of the Philippines in Manila. DOST's Science Education Institute organized the annual tribute.

This year's honor haul completed diverse science courses with excellence earning honors such as summa cum laude (6), magna cum laude (69), cum laude (190), honorable mention (1), academic excellence (2), three academic distinctions (3).

There were 49 graduates under the DOST-SEI Merit Scholarship, the precursor of all DOST scholarships including two summa cum laude, 22 magna cum laude, 24 cum laude, and one honorable mention.

Under Republic Act 7687 Scholarship Program, 167 scholar-graduates earned honors including two summa cum laude, 39 magna cum laude, 123 cum laude, one Academic Excellence and two Academic Distinctions. RA 7687 or the Science and Technology Scholarship Act of 1994 aims to raise the country's S&T human resource by granting financial assistance to poor but talented students who want to pursue priority courses in science and engineering.

Six scholars graduated ahead of the prescribed study period. As an incentive, they will get their stipends for the "excess" semesters along with shortened service obligation specified in their scholarship contract.

Under the Junior Level Science Scholarship Program, 45 scholars graduated with honors including one summa cum laude, seven magna cum laude, 35 cum laude, and one with academic excellence. This scholarship program is offered to qualified regular third



In Touch. Department of Science and Technology Undersecretary Fortunato T. dela Peña (4th from left) and Science Education Institute Director Dr. Ester B. Ogena (front) pose with graduating DOST scholars during a break of "In Touch with Excellence" program

year college students enrolled in "priority courses" in the basic sciences, engineering, and applied sciences in any of the DOST-SEI network of higher education institutions.

Two students graduated cum laude under another scholarship program called Project 8102 that's implemented in cooperation with the Philippine Normal University, De La Salle University, and Technological University of the Philippines. This scholarship program seeks to develop a new generation of competent science and mathematics teachers committed to teach in secondary schools.

Moreover, five scholars graduated cum laude under the Project 2004-01 Education at University of San Carlos in Cebu.

Meanwhile, two scholars graduated summa cum laude and cum laude under the Accelerated Science and Technology Human Resource Development Program, a unified human resource program that aims to hasten advanced human resource development through graduate and post-graduate scholarships.

One scholar finished with magna cum laude honor in the Engineering Research and Development for Technology (ERDT) program, a graduate scholarship program in priority

engineering courses and related fields.

"Today's generation is a sharing generation. I challenge our scholar-graduates to share their knowledge, experience, skills, and habits to their fellow scholars and other people their secret in achieving the excellence they have possessed, which we honor at this ceremony," DOST Secretary Mario Montejo said.

DOST will continue to search and nurture students who want to become scientists and engineers through scholarships and similar intervention programs, he added.

"Every year, we produce scholar-graduates who finish with flying colors but we will not rest in our continuous quest to build a critical mass of scientists and engineers in the country," he said.

On the other hand, SEI Director Ester B. Ogena noted that there are 1,437 DOST scholar-graduates nationwide in school year 2009-2010. Among these, 1,203 are under the S&T college level scholarship program.

"SEI shall be at the forefront of beefing up the Philippines' pool of scientists and engineers in support of the country's development," she added. SEI currently supports 11,767 scholars throughout the country.

DOST clears air over PAGASA scuffle

By ARISTOTLE P. CARANDANG
S&T Media Service, STII

CLOUDS OF doubt over the real score on the replacement Dr. Prisco Nilo as Director of the Philippine Atmospheric, Geophysical and Astronomical Services Administration or PAGASA has finally dissipated.

In a press conference held 10 August 2010, Department of Science and Technology (DOST) Secretary Mario G. Montejo said that differences between him and Dr. Nilo to effectively discharge the mandates of the weather agency was the major reason for the latter's transfer of post. Dr. Nilo has been transferred to the DOST Central Office in Bicutan, Taguig City where he will lead a special project on Climate Change Mitigation and Adaptation under DOST Undersecretary for S&T Services Fortunato T. Dela Peña.

Secretary Montejo said in an interview that Dr. Nilo's new appointment would be for the good of both the Department and PAGASA. He explained that Dr. Nilo's exper-

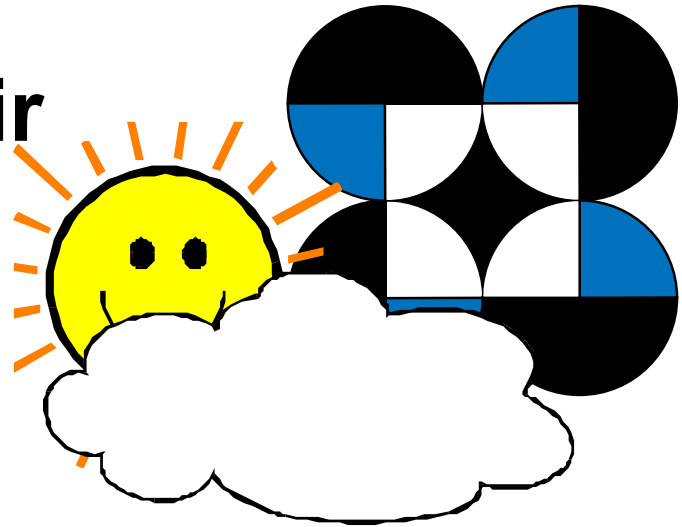
tise in meteorology will benefit the climate change project of the Department. Secretary Montejo's next moves with regard to weather forecasting are presented in four key messages: sense of urgency, innovation, enhanced cellular-based information dissemination, and saving lives and properties using a multi-pronged approach for their implementation. He further explained that an early warning system, especially during calamities, would be enhanced by having a two-hour window warning for people in affected areas to be prepared.

Replacing Dr. Nilo for a period of three months as Officer-in-Charge is DOST Undersecretary for Research and Development Graciano P. Yumul Jr. In 2005, Undersecretary Yumul was the steward of PAGASA as its OIC.

Reports show that PAGASA under Dr. Yumul was able to get 11 of the 13 grants from various foreign funding groups, triggering PAGASA's ongoing modernization program.

Aside from the early warning systems, Dr. Yumul said that one of the more immediate actions of PAGASA is information dissemination with form and messages that can be easily understood by most Filipinos. "Preparations are ongoing to train PAGASA forecasters to effectively communicate with the public," Dr. Yumul said.

On August 6, President Benigno Aquino issued a statement on Dr. Nilo's replacement because of the differences between Secretary Montejo and Dr. Nilo.



PNHRS stakeholders meet to seek creative ways to share resources for health research

KEY ACTORS and stakeholders of the Philippine National Health Research System (PNHRS) focused on innovative and effective resource sharing mechanisms to promote and sustain health research in the Philippines to celebrate this year's PNHRS Week.

Stakeholders agreed to act as one through swift, aggressive, and essential approaches to achieve better health for all. Hence, the group underscored better linkage and focus on the National Unified Health Research Agenda, and pushed forward the enactment of the PNHRS bill at the local level.

With the theme "Convergence in Di-

vergence: Resource Sharing for More Mileage in Health Research", the two-day 4th PNHRS Week inspired participants to have better ideas and more zest in getting their acts together to move the PNHRS forward.

The regions are at the helm of the PNHRS as they follow good practices in resource sharing, according to PNHRS organizers. These good practices include converging and seeking commitment of various institutions from different sectors and disciplines, engaging in collaborative health researches, and mentoring young researchers. They also provide counterpart fund, staff support, and time, as well as share facilities/infrastructure, expertise, materials, and information.

Meanwhile, the PNHRS body honored the winners of the Outstanding Health Research Award, namely the Institute of Human Genetics of the National Institutes of Health in UP Manila, Dr. Bayani Blas of the Doña Remedios T. Romualdez Medical Foundation in Region 8, and Dr. Enrique Ona of the National Kidney and Transplant Institute for their work on new born screening, control and prevention of schistosomiasis, and kidney transplantation, respectively.

Further, the exhibit focused on "Local Solutions for Local Health Problems," highlighting research results of young researchers. (*S&T Media Service*)

DOST Sec. Mario G. Montejo: The man and his vision

By RODEL G. OFFEMARIA
S&T Media Service, STII



“To be creative you have to contribute something different from what you’ve done before. Your results need not be original to the world; few results truly meet that criterion. In fact, most results are built on the work of others.”

— Lynne C. Levesque
Breakthrough Creativity

WHEN PRESIDENT Benigno Simeon Aquino III announced on national TV the appointment of Engr. Mario G. Montejo as the new Secretary of the Department of Science and Technology, the news quickly rippled through the science community. To many, the name and the face are fresh.

That’s partly descriptive of the new man at the helm of DOST, low key and soft spoken. But he carries a big stick as a suc-

cessful technopreneur—a self-description that’s almost an understatement from someone who competed well in an industry traditionally dominated by giant multinational industry players.

The person

The presidential announcement thrust Montejo, 57, to national spotlight, at least among the tightly-knit science community. On the spot, his universe expanded. His responsibilities at once swelled along with the loads of interweaving challenges bolted into the nation’s top S&T job.

But, easily, the son of a “middle class” parents, the second in a brood of four has come a long way. “My father was a government employee and my mother was a housewife”, he says.

In 1963, the Montejo family migrated from Tacloban to Manila. Young Mario was in grade four. “We stayed in a small two-bedroom apartment” in Tayuman, Sta. Cruz district in Manila, he said.

Montejo grew up in that once vibrant section of the capital. In such environment, a dream to live in a big house grew, too. That’s because “I developed claustrophobia,” he disclosed.

The student

His parents, like most others, worked hard to send Montejo and his siblings to good schools. He completed primary education in a nearby Catholic school, and then went to Lourdes High School in Quezon City.

In 1969, he went to the University of the Philippines to pursue BS Mechanical En-

gineering. "All classes of people are there, so you can adjust easily," he said. The liberal mix made "college life better than high school life."

But those were heady days for sociopolitical involvement. The First Quarter Storm was raging, which defined a generation fully awake and wrestled with the deadly fallout of boiling tensions spewed by the same classes of people that made up Montejo's academic world. He was at ground zero.

"Everybody was doing their share for the good of the country," he said. He joined rallies once or twice.

But he wasn't really "politically inclined." He realized "you have to do something for the country where you are equipped." In his case, it's in engineering field.

The technopreneur

In 1975, Montejo completed his BSME degree, and placed 6th in the Mechanical Engineering Board the same year.

His academic background made job hunting easier. In two years, he was earning well. After three years, he ventured into construction as contractor for electrical works, building of canteen, bakery, etc.

Eventually, he designed and fabricated an equipment that produced the first locally made water well screen that became a hit with industrial estates and subdivisions.

The demand for the product apparently gushed. "There was a time we operate 24/7 to meet orders," he said.

The product was competitive on price and quality. The water well screen market was previously dominated by Australian and US brands.

To Montejo, there was a lot of pride in breaking through a market with import-substitution strategy. Sometimes, he said, "enjoyment is stronger than the business part."

The commercial success that flowed out of the water well screen spread into other bigger projects. There is money in innovation, Montejo said matter-of-factly. "As

long as you can provide solutions to problems, you can do business."

"I like to tinker with ideas and try to earn" from such ideas at the same time. "Tinkering," in Montejo's realm, has led to better business productivity, optimum space use, safer recreation, practical environment management, and affordable quality options.

"I apply what I learned in engineering to business activities." So far, he lists "firsts" local inventions such as "GSM based water level sensor and rain gauge for flood monitoring and forecasting," modular and transferable steel car parks, robotic car park, the world's first aero-musical ride, the world's first motorized zipline, ship-to-shore cranes now installed in Cagayan de Oro's Oroport, the first locally fabricated equipment for hot-dip steel galvanization; the first locally fabricated equipment for manufacturing of steel poles, gabions, SRC panels, water well screens; and the first locally fabricated water drilling equipment with rotary table.

He has completed projects with major companies in the country involved in tollways, power distribution, seaports, shopping centers, and even local government units using such locally developed business solutions. "Local conditions require local solutions," he explained. And almost always, local solution comes out cheaper.

"We have to rely on our own talents and resources." Montejo strongly believes that "there's always a way of doing things if there's no conflict with engineering fundamentals," which "gives you confidence" about quality and safety, among others.

Invitation to public service

Having achieved a "comfortable" life, Montejo was ready to "slow down." But President Aquino sent word he wanted to see Montejo's curriculum vitae. Anticipating what might follow, Montejo discussed with wife Ma. Rosario and their four children what looms to be a far busier public life. Then "I was offered the post," he said.

The day he went to Malacañang with a decision to accept the top DOST job, he also knew it meant a "sacrifice in pay and lon-

ger work hours." Yet it was also a chance to "make a difference that's beyond money".

Before Montejo's appointment, he is president of two thriving companies. One is NWSteel Technologies Inc., which manufactures or fabricates steel structures including steel poles, ship-to-shore gantry cranes, and mega tent structures, among others. The other company is called Tree Top Adventure Philippines Inc., which is involved in eco-adventure/eco-tourism theme park.

Pres. Aquino showed interest in technology related business activities, Montejo said. "We're aligned in thinking about what local technology can do" to improve productivity and development.

Expectations, Vision

In DOST, Montejo found himself "with creative people" who are "passionate" in what they do.

He wants to pursue a "market driven approach." That means "we will justify our existence by creating socioeconomic values" through DOST programs.

To do this, he wants to list down problems that DOST may be capable of providing solution in measurable terms. We want projects that would benefit people and society, he says.

He believes that DOST should have a stronger role in the national development mission over the next six years including life enhancing programs on nutrition, dengue control, disaster management, and mass transit, among others.

The nation's top S&T administrator says "R&D is not an expense" but a wise investment for the future. "As long as projects have scientific basis, and whatever products or services they provide are superior to existing or are in the market, I will support such projects," he added.

In a nutshell, his vision is "to be faithful to the mandate" of DOST.

So far, Sec. Montejo is keeping pace with his new role, which is like the chief technology officer of the country. That includes adjusting to the new environment of exhaustive "bureaucratic process."



Science Secretary Montejo bats for local tech

By ARISTOTLE P. CARANDANG
S&T Media Service, STII

"LOCAL TECHNOLOGY works" is the emphatic message of Secretary Mario G. Montejo of the Department of Science and Technology (DOST).

Secretary Montejo said that the National Innovation Agenda dubbed 'Filipinovation' represents the policy direction of the new administration. Citing the advances made by the science community in the past, he said that the country can count on Filipino researchers given a climate conducive for innovation; supporting and working with local firms to come up with products, services, and technologies that are competitive.

"Remember that we are encouraging complementation where initiatives are harmonized for the various disciplines to work together with the goal of making things simple yet beneficial," Secretary Montejo explained.

What's important, according to the new Science Secretary, is the Department's

effort of promoting technologies that have been developed by the Filipinos. "Another good side of this effort is that we are attacking problems via strong partnership. The government, academe, and private sector are working together towards attaining a common goal," he added.

Of the many plans the DOST wants to realize, according to Secretary Montejo, is the locally manufactured mass transit system which is already on the initial stages of development. The railway track for the planned prototype will be at the University of the Philippines Diliman. He disclosed that groundbreaking will be by November 2010 and will be completed within six months after the groundbreaking. "What makes this mass transport system different is that it will be locally manufactured and would cost much less than other mass transport systems developed from other countries," he said.

Secretary Montejo also shared the DOST is also considering the possibility of

using wind energy by way of windmills. "But we are seriously looking at the most cost-effective design unlike the ones currently used in Ilocos. We hope to bring down the cost of production to at least 50 percent compared with what is currently in use," he added. Other aspects that DOST is considering are flood monitoring and flood control. On the monitoring side, the DOST is currently upgrading the existing sensors along the Marikina River and designing flood control systems together with other agencies.

Various undertakings are also underway as far as information and communications technology is concerned. The DOST is determined to develop a PC tablet for students that would cost as low as PhP3,000.00. This would come in much cheaper than those available in the market and would be advantageous to students. "Imagine a PC tablet at PhP3,000.00. If mass manufactured, there is still the possibility of pulling down its cost to make it even more affordable," Secretary Montejo said.

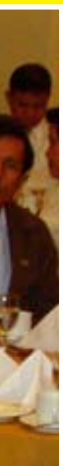
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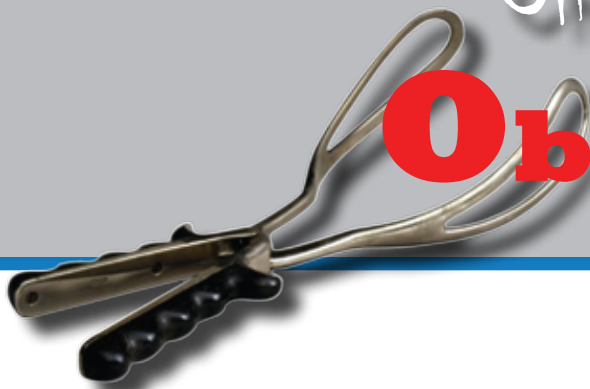
PEOPLE



EXHIBITS



Charlatans, superstition, quackery

Obstetrics in the Ph

By FRAMELIA V. ANONAS
S&T Media Service, STII

FOR A first-time mother in this generation, giving birth whips a scuffle of excitement, pain, and joy. But for a first-time mother in the 1700s, the swirl of emotions were most likely far different- maybe a little more creepy.

This can be sifted through the account of Dr. Fernando Calderon, a renowned gynecologist at the turn of the 20th century in his 1908 paper published in the *Philippine Journal of Science*. Dr. Calderon holds the distinction of being the first ever Filipino author to publish his work in the highly-regarded journal founded by eminent American scientists sent on assignment to the Philippine islands by the new imperial power.

Calderon's paper entitled "Obstetrics in the Philippine Islands," describes obstetrics procedures during the 1700s. The paper explains the awful childbirth practices during that period, particularly in communities without access to proper medical care. What came out in his investigation was a generation of mothers battered by superstitious practices that brought suffering and even death.

Only midwives allowed here

Calderon noted that during childbirth, only traditional midwives or *hilots* were allowed to assist in child delivery. *Hilots*, usually the community's oldest women acquired authority based on their own childbirth experiences. It was no surprise that hilots based their diagnosis on strange "symptoms," such as the size of the moon, appearance of comets, tidal rise and ebb, wind direction, and temperature to prophesy the development of

pregnancy or the evolution and progress of childbirth.

In cases of difficult childbirth, the poor mother is left to the tender mercies of the elements. If she fails to survive the torment, the blame was kicked out to the usual malevolent spirits called *aswang*. According to folklores, the *aswang* eats up the baby inside the mother's womb.

In cases of spontaneous abortion, the *hilot* passes out the accountability to another spirit called *patianac*, which supposedly enters the woman to devour the fetus. But in the contemporary medical world, the condition could be a case of expulsion of macerated fetus, uterine mole, placenta previa, etc.

Calderon concludes that such superstitions came from ancient pagan beliefs that were so widespread during that time. He recalled that as an intern, he performed an autopsy on a woman who died because a quack "barbarously beaten her with the tail of a stingray."

The woman had normal delivery and had contracted puerperal or childbed fever, he noted. This means that she caught an infection following childbirth because of unsanitary instruments used by the attending *hilot*. But the *hilot* blamed the *aswang* for the woman's furious chills, which the *hilot* ruled need to be expelled of her body through severe whipping of the stingray's tail.

Another doctor told of a woman in Manila who just gave birth and was given a drink of horse excrement "in order to facilitate labor." The poor woman caught tetanus and died.

Other women, believing they will be spared the pains of childbirth, applied scapular images and religious medals on their abdomens or extremities.

Influence of missionaries

When Spanish missionaries came to the islands, they fervently ministered to the spiritual needs of the people, and also attended to the sick including women giving birth. Calderon cited the work of Fr. Pablo Clain, S.J. entitled "Easy Remedies for Various Diseases" published in 1710 detailing how the friars attended to mothers on the throes of childbirth.

Despite the observed backwardness of treatments during his time, Calderon was still shocked at the more barbaric way the friars "treated" their patients. For example, Clain's instructions to women about to give birth were to induce sneezing by blowing mustard seed powder and white pepper into their nostrils. She should also eat "balls of hair formed on deer or hogs." The *hilot* also should anoint her abdomen with lukewarm coconut oil mixed with "*escobilla*" juice or other herb decoctions. She is also injected with "acrid and irritating" materials, such as gall of a black hen or mouse excrements.

If the baby happens to be in abnormal position while being born, such as getting out leg or arm first, the *hilot* was to "push it back inside the mother . . . and after the child is again within, she must manipulate it so it will emerge in due form . . ." After the woman gives birth (if successful, by the way), Clain instructed that she should be applied with various materials such as snake skin and made to drink dog urine, or horse or cow excrements.

Philippines circa 1700s

Another work, mercifully modern than Fr. Clain's and inclined toward surgery, advises every curate to secure the "proper instrument", which is a convex bistoury (surgical knife). Such instructions show that the medico-social influence of missionary friars in the country "has been exceedingly important, especially in the field of obstetrics," according to Calderon.

Influence of Chinese immigrants

During this period, thousands of Chinese immigrants settled in the country and introduced a ripple of Chinese superstitions. Calderon was then municipal physician in Ormoc, Leyte and saw for himself Chinese methods of treating diseases.

He noted that the Chinese discern the ease and difficulty of a woman's childbirth experience through the lines on her palms. If a line completely crosses the palm, she will have difficult births. During childbirth, cylindrical bricks are heated well and applied on the abdomen, purportedly to expel wind and cold from the womb, which the Chinese believed were the woman's "mortal enemies."

When delivery is difficult, the husband is made to step over the wife two or three times to induce delivery. If this is ineffective, they tie the husband's used drawers to the woman's hair, "so that the smell of his father may cause the fetus to emerge." When a woman is hemorrhaging, her hair is tied in a tight knot and is prohibited to sit down to "prevent the spirit from escaping the body."

When the poor patient appears to be in a very serious condition and about to hemorrhage, the family members kill a chicken, cut it open, and smear blood to the woman's breast to "give her life."

Calderon also recalled an incident in Ambos, Camarines where the wife of a Chinese had postpartum hemorrhage caused by the retention of the placenta. To stop the hemorrhage, the Chinese and the *hilot* coiled her hair very tight and used it to hang her from one of the beams of the house. The woman tragically died of convulsions while suspended in mid-air in such unimaginable agony.

Many *hilots*, Calderon observed, did not cut the umbilical cord until the placenta has been delivered, leaving the baby in between her mother's legs for hours, covered with fat-like substance, meconium, amniotic fluid, blood, and feces.

Obstetrics advances in the Philippines

From Calderon's account, it appears that our great great grandmothers suffered immensely during childbirth. These "barbarous practices and manipulations which are an outrage to civilization have cost the lives of many women in childbirth," said Dr. Calderon. He denounced the barbaric practices during that time, but acknowledged the efforts of Spanish and Filipino physicians who, beginning 1870, shed the "first rays of the light of medical science on the chaotic state of affairs."

He named several people who, Dr. Calderon said, deserve gratitude and praise for contributing a "grain of sand" to the establishment of scientific foundation of obstetrics in the country. He especially mentioned Dr. Felipe Zamora as the "best obstetrician of Manila and adjacent provinces." He also noted the establishment of the school of midwives in 1879 that professionalized the training of midwives.

Obstetrics in the country quickly advanced following the establishment of the Bureau of Health in 1901 and the Philippine Medical School in 1905. Calderon strongly

believed, while writing his paper, that the advancement of obstetrics in the country was very helpful to women who by then know that they need to call a physician when giving birth. But he also empathized for the "nameless mass of parturients of the lower classes" who had little choice against the mystical forces that barnacled them to a cheerless fate.

He also acknowledged that women died while giving birth not only because they were in the wrong hands, but also because they were in such "absolutely lacking [in] hygienic conditions." He also noted the women's aversion to hospitals as they were attached to their homes and families where they felt more comfortable. Beds for childbirth were practically unoccupied for many months in many hospitals.

Dr. Calderon's observations provide important documentary on how obstetrics evolved in this country--once dominated by charlatans, superstition, and quackery.

Note:

The recording and archiving of Calderon's research findings was made possible by the Philippine Journal of Science which serves as the country's leading repository of groundbreaking scientific findings since 1906. It is the Philippines' premiere science journal that is ISI-covered, and peer-reviewed on a double-blind mode. It is managed by the Department of Science and Technology's Science and Technology Information Institute. PJS was first published in 1906 by the Bureau of Science, the forerunner of today's Industrial Technology Development Institute, also of the DOST.

Other interesting papers on varied topics are reprinted in the PJS Centennial Edition Vols. I and II, now on sale at P700 per copy.

Are meat, milk and eggs safe?



By GERALDINE BULAON-DUCUSIN
S&T Media Service, STII

Despite the clamor of the media and health advocates for the public to stay away from unhealthy eating habits, such as too much meat and eggs, it is hard to let a meal pass up on a Filipino table without serving meat, milk, eggs or products made from these items. Adobo, *kwek-kwek* and leche flan are only a few of the Filipino favorites that continue to be a mainstay in the Filipino diet despite the increase in cardio and diabetes cases in the country. *Kwek-kwek* is a Filipino delicacy made of quail eggs and some orange batter, deep-fried, and dipped in vinegar.

Experts say that meat, milk, eggs and their products are safe when properly handled. In the case of the Philippines, food safety in animal-sourced foods has yet to be strengthened. At the 10th Science Council of Asia Conference hosted by the Philippines through the National Research Council of the Philippines, Dr. Mildred A. Padilla, a professor at the UP Los Baños College of Veterinary Medicine, said, "Livestock and poultry are principal sources of many harmful food-borne microorganisms and chemical residues."

Dr. Padilla discussed the link of disease-causing microorganisms that travel from animals to human. She cited the bacteria that are present in eggs soiled with fecal matter or are cracked or opened, which the public may consume from the streetcorners' *kwek-kwek* stall. Then there are also the veterinary drugs residue which may also find their way inside the human body.

In a country where food safety policies and initiatives are not well-coordinated, the public is at risk of being exposed to food-borne diseases such as Salmonella, a type of bacteria which causes illnesses like nausea, vomiting, abdominal cramps, diarrhea, fever, and headache. Salmonella is generally transmitted to humans once they consume

contaminated food of animal origin, mainly meat, poultry, eggs and milk.

In her presentation, Dr. Padilla cited that while animal-associated microbial and chemical contamination of food can occur at any stage of the food chain, most reported cases of breach in food safety guidelines take place at the animal production area,

such as in farms and even in abattoirs. She recommended adopting the "farm-to-table approach" in handling food safety in the Philippines. This approach pertains to ensuring proper implementation of food safety guidelines in all stages of the food supply chain, from feed production, animal production, processing, transport, storage and retail sale.



Heavy metal eating bacteria for waste water treatment

By MARIA JUDITH L. SABLAN
S&T Media Service, STII

A bacterium capable of biosorption of copper, cadmium, and lead was isolated from Mospog River in Marikina, Philippines. In a study by a group led by Marilen Parungao from University of the Philippines Manila, the bacterium called *Stenotrophomonas maltophilia* demonstrated the ability to biosorb as much as 22 percent of copper, 24 percent of cadmium, and 42.75 percent of lead when tested in synthetic primary (single metal) solutions. The tiny creature can also remove as much as 16 percent of copper, percent of cadmium, and 35 percent of lead in ternary (mixed metals) solutions.

Biosorption is a property of certain types of inactive, dead, microbial biomass to bind and concentrate heavy metals from even very dilute aqueous solutions. Certain biomass with metal-binding capacity are seaweeds particularly the brown algae *Sargassum* and *Ecklonia*; microorganisms such as the bacterium *Bacillus subtilis*; the mold

Rhizopus; fungi; yeast; activated sludge; fermentation waste; and other specially propagated biomasses.

Heavy metals are naturally present on earth. Some heavy metals such as zinc, copper, chromium, iron, and manganese are required by the body in small amounts. But these elements can be toxic in larger quantities. Meanwhile, lead, mercury, cadmium, chromium, and copper are very toxic metals. Heavy metal contamination is a major environmental concern in many water ecosystems. Toxicology studies confirm its dangerous impact. Toxic heavy metals released by industries poison the environment and threaten water supplies. Dissolved metals that escape into the environment pose serious health hazard. They accumulate in living tissues throughout the food chain – with humans on top – multiplying the danger. As levels of heavy metals increase in the air, water, and topsoil, they also increase within our bodies contributing to chronic

diseases, learning disorders, cancer, dementia, and premature aging. These are more than enough reasons to control emissions of heavy metals into the environment.

Conventional techniques to remove toxic metals include chemical precipitation, filtration, electrochemical treatment, and membrane technologies. But these methods are extremely expensive, lack specificity, and ineffective at low metal ion concentrations. Moreover, current technologies for the removal of heavy metals from industrial effluents often create secondary problems with metal-bearing sludge.

Biological material sorption or biosorption can be considered as a novel process to remove toxic metals from industrial effluents. It is effective, simple, and cheap. With the study revealing *S. maltophilia*'s ability to biosorb, it can be used to remove heavy metals from the river, which is one of the major tributaries of a mining industry in the country.

THE BRAIN

By **JOWI A. CARTECIANO**
S&T Media Service, *NRCP*

Twelve-year old Edi has what most parents wish in their kids--thoughtful, supportive, and cheerful.

A bright sixth grader in a Quezon City public elementary school, Edi did well both in academics and sports. He was a member of the drama and science/math clubs. His fondness for badminton and basketball likely kept him in the pink of health. He was rarely sick.

In the second grading period of school year 2008 – 2009, Edi was only few points short from the first placer. His math teacher said Edi was hoping to deliver the valedictory speech on graduation day in March 2009. He promised to dedicate his academic achievements to his parents and two younger brothers.

Lost dream

Everything seemed working according to young Edi's wishes. On the eve of December 8, 2008, Edi developed low fever. His father believed Edi went down with the flu.

But for 10 days, Edi couldn't shake the fever off. On the eleventh day, his speech slurred and had trouble keeping his balance with shifting moods.

At dawn of the next day, Edi's family was roused by a loud noise coming from Edi's room. In horror, the father saw Edi clutching his fists, eyes wide open, shaking violently on his bed, and grimacing in what seemed to be very excruciating pain.

Shortly after, Edi slipped into coma while being rushed to the hospital.

Five days before Christmas, the attending physician told Edi's parents that the boy's brain doesn't respond anymore. Young Edi went away.

Brain invasive

The attending physician initially thought

that Edi died from meningitis, an inflammation of the protective membrane coverings of the brain and the spinal cord (nervous system) of which the bacterium known as meningococcal is the main cause.

The hospital's team of experts on infectious diseases doubted the initial finding. Additional laboratory tests were conducted using some tissues from Edi's remains. Based on the new tests' results, the hospital issued an official death certificate indicating the cause of death as rabies infection.

Rabies is a viral neuro-invasive disease caused by a virus species of the *Lyssavirus* genus, which includes similar viruses that cause viral hemorrhagic fevers.

A World Health Organization fact sheet dated December 2008 explains that rabies is a zoonotic disease—a disease transmitted from animals to humans. It infects domestic and wild animals, and is spread to people through close contact with infected saliva (via bites or scratches).

Dr. Aleli Arambulo-Collado, a veterinarian from the secretariat of the National Research Council of the Philippines explained that rabies infection sets in after a rabid animal bites somebody. "Transmission" happens when virus-laden saliva gets into tissues (muscle tissues). But introduction of the virus from saliva or tissue fluids into fresh wounds or intact mucous membrane may also occur.

Rabies virus replicates within the muscle tissues near the inoculation site, and travels through the nerves that carry impulses towards the central nervous system to the spinal cord and goes up the brain. Once in the brain, the virus then travels back through a different nerve path

affecting other tissues and organs to the salivary glands, she added.

The salivary gland receives high concentrations of the virus, making saliva a potent vector or channel of further transmissions.

The disease's incubation period depends on how far the virus must travel to reach the central nervous system, usually taking a few months (Robbers and Cotran: *Pathogenic Basis of Disease*: 2005). But without medical intervention and intensive care, death strikes during the first seven days of illness.

Exposed mucous membranes such as eyes, nose or mouth are especially vulnerable. They serve as entry points for rabies virus infection through saliva. In this regard, utmost caution must be practiced in handling rabies patient.

Initial physical manifestations of rabies infection are flu, fever, and headache with complications to respiratory system. Advanced symptoms include seizure or convulsion, hydrophobia (fear of water), hyperactivity (furious rabies), and paralysis (dumb rabies).

Both furious and dumb rabies symptoms eventually develop to total paralysis, coma, and death in all cases due to breathing failure.

When symptoms of rabies disease develop, death is inevitable.

Nightmare

Dr. Teodulo M. Topacio, Jr., a National Scientist for Veterinary Medicine, said in a July 2009 interview that it is a nightmare to see people suffering from rabies infection because of the terrible seizures they endure.

The prevalence of rabies infection

SLAVER



runs wild worldwide. More than 95% of human casualties are in Asia and Africa.

In 2006, correspondent Kathleen E. McLaughlin of Global Post reported that the growing number of researches point to unsanitary “ranching” and direct human consumption as two of the main factors in the rise of rabies related fatalities in Asia.

In the same year, Philippine media reported some cases of rabies fatalities from eating dog meat.

One of the conclusions of a Vietnamese research related to such cases was that dogs are the main rabies reservoir afflicting humans. In this light, dog raising, butchering, processing, and consumption should be regulated and controlled to ease the rising number of fatalities (17 March 2006, PLOS Medicine Magazine, VietNam).

Meanwhile, according to Dr. Lunynging Elio-Villa, pet dogs and cats actually cause 88% and 2% rabies infections in the Philippines, respectively. This is contrary to popular belief that rabies comes only from stray dogs and cats, she added.

Dr. Elio-Villa is a renowned Filipino researcher on infectious diseases who, along with foreign counterparts, done research on genetic analysis of rabies virus in the Philippines.

Death every 10 minutes

The rabies virus kills 55,000 people every year--31,000 in Asia and 24,000 in Africa (WHO: 2008). For every 150 deaths a day, 100 are children (World Alliance for Rabies Control: 2008).

The Philippines ranked fourth worldwide in rabies incidence, and the number of victims are increasing despite government efforts to rid the country of the problem by 2020, wrote Claire Wallerstein in an article

“Rabies Cases Increases in the Philippines” published in the 1999 issue of the British Medical Journal. Recent data show that an average of 300 – 500 deaths per year or one per day occur in the Philippines, from a total of 12,365 human rabies cases (Department of Health: 2008).

Revenge of the Aspins

In the Philippines, one in every 10 families has a dog. Quezon City’s 2 million population alone account for 200,000 stray dogs or playfully labeled aspin (*asong Pinoy*) or *Askal* (*asong kalye*). Filipinos are very fond of puppies. But grown up dogs are left to fend for themselves, roaming the streets, Dr. Topacio noted.

Stray dogs are blamed for 98% of human rabies cases domestically. Large scale vaccination or at least 80% of the stray dogs is the only way to drastically bring down human rabies infection. Unfortunately, inadequate funds hinder massive anti-rabies vaccination campaign (Bureau of Animal Industry: 2008).

In Asia, two factors are correlated with the high incidence of rabies related fatalities. First, about 30% to 60% of the victims of dog bites are children less than 15 years old. Children are less likely to report bites and scratches.

Second, deaths are increasing in poor rural area since the cost of post-exposure prophylaxis (PEP) is very expensive (WHO: 2008).

Treatment

The Philippine Society for Microbiology and Infectious Diseases (PSMID) insists on thorough washing of wound/s with soapy water for approximately five minutes immediately after dog bite or scratch. This is very effective in reducing the number of rabies viral particles. To irrigate the wounds, virucidal

antiseptic such as povidone-iodine, iodine tincture, and aqueous iodine solution of alcohol or ethanol should be applied.

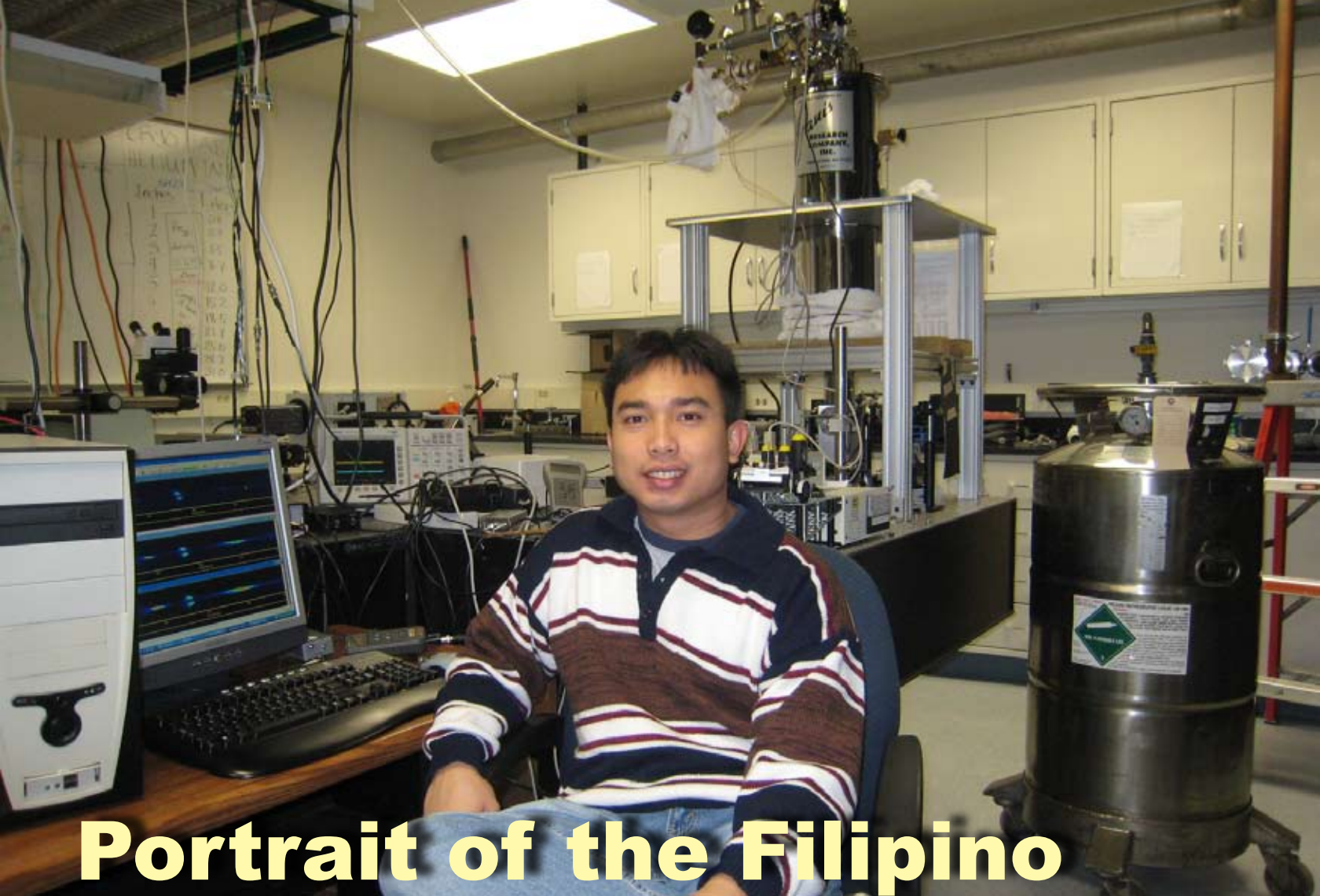
On the other hand, if rabies infection comes from saliva through open mucous membranes--eyes, nose, or mouth--these should also be flushed with water thoroughly. Administration of anti-tetanus vaccine booster should also be considered, PSMID added.

If the victim didn’t have previous PEP treatment, human rabies immunoglobulin or HRIG should be administered. HRIG provides the victim with passive immunity and immediate protection from rabies virus infection. This is given once only at the beginning of treatment.

With these critical procedures, PEP vaccine series should be administered at 4 doses over a 14-day period (WHO).

If immediately administered after exposure, without delay, or with very little delay, PEP is 100% effective against the rabies virus. Otherwise, it should be administered regardless of the time that lapsed as it may still save a life.

In a sense, a rapid anti-rabies infection action and medical management is the best first step to bite back at the ferocious rabies virus.



Portrait of the Filipino as a **DOST** scholar

By MARK IVAN C. ROBLAS
S&T Media Service, SEI

The Department of Science and Technology through the Science Education Institute is at the forefront of expanding the Philippines' science and technology human resource for the past 16 years. It provides a scholarship program that gives poor but deserving students a chance to earn a college degree and, possibly, live their dreams.

The program has over the years produced more than 10,000 S&T professionals that shored up demands in the academe and industry.

To get a feel of the scholarship program's impact, the S&T Post interviewed Ryan Balili who was part of a research team that found a new source of coherent light, like lasers, which could be the future of optical communication.

Balili completed his Bachelor of Science in Physics *summa cum laude* in 2002 at the Mindanao State University Iligan Institute of Technology. He went on to finish his graduate and post-graduate education in Physics at the University of Pittsburgh.

Balili along with his adviser David Snoko of University of Pittsburgh demon-

strated that the transition of particles into waves could be done at higher temperature, which requires lower power to generate.

Here is his story.

S&T Post: How did you learn of the DOST scholarship?

Balili: We were told in high school about it. I can't remember though [if it] was either our class adviser or our guidance counselor.

S&T Post: How did you prepare for your DOST examination?

Balili: It wasn't really a practice in our school to prepare for entrance or scholarship exams. I don't remember preparing for it. I guess our teachers, in Dole Philippines School where I graduated, thought that our elementary and high school education was enough preparation. I guess it was, for me at least.

S&T Post: How did you learn of the test results? What was your reaction?

Balili: The results were published in the newspaper. I was very happy to get the scholarship. I was looking forward to having my own money. It was only later that I found out I would only get half the full stipend because of the program I was in. It was called Program B before. Still, I was happy and a bit proud actually.

S&T Post: During college, please describe how it was being a DOST scholar. How did you live up to the grade requirements?

Balili: DOST was a big part of my college years. We had MIDSA (MSU-IIT DOST Scholars Association). The group was very active managing the welfare of the scholars. On my third year in college, I was elected president.

I don't recall the grade requirements to have bothered me at any point of my college life. There was another thing I was more afraid of. One of my high school teachers love to tell us stories about terror college teachers who fail their students for no reason [at all]. So after high school, I resolved to try to ace all of my exams and keep the records so that the professors wouldn't have any reason to fail me.

S&T Post: What were the challenges

you faced during the time that you were studying?

Balili: I ran after beautiful girls. They ran away from me. Just kidding. I can't remember particularly challenging moments with regards to my studies. I had a lot of fun during college. I was governor of my college's student government during my 4th year. It was particularly stressful managing students. Also, my ideals weren't shared by many. So it was a tricky year. But I learned a lot.

S&T Post: After college, you went on to study abroad? How different was it studying here and there? What were the challenges you faced when you were there?

Balili: Yes I did. I went to the University of Pittsburgh in Pennsylvania to get my masteral and doctorate in Phy-sics. I'm not sure I could compare it with undergrad life. Graduate school was really serious, hectic, and demanding. I still get nightmares about it sometimes. I'm thankful for it though, and for the opportunity. I guess there's just no way around hard work if one wants to improve himself. The greatest challenge I think was adjusting to an entirely different environment. I had to adjust to a lot of things like culture shock, academic pressure, loneliness, and an extremely demanding workload. I wasn't the worst of my peers. But then I really thought many of my classmates had a much much better education. Being the only Filipino in the history of the physics department at UPitt, I had to stand on my own without help from people from home.

S&T Post: After studying and earning a PhD abroad, why did you choose to return to the Philippines?

Balili: Actually, I chose to return home before leaving the Philippines. I know this may sound sentimental, but I love my country with all its pimples and warts. I felt at home here, and that didn't change despite the blessings I enjoyed in US. Oh sure, the US was beautiful, more beautiful than I have imagined. I had many friends whom I was sorry to part with. I enjoyed my stay in US and it felt like home. But it really never was. There was just a certain tension that would not go. A tension that I don't feel when I'm here in the Philippines.

Also, I could not stay in the US with a

clear conscience. I made a promise to come back. I've seen the needs of our country, our people. I was privileged all my life and I just couldn't turn my back and close my eyes without even trying to help. If I do, I'll be a contradiction to my own faith and convictions.

S&T Post: What is your message for those aspiring to become a DOST scholar?

Balili: First of all, for those who are already DOST scholars, please don't waste the government's money. I've met a few of the heads of the DOST and they are truly making the most of what little money they have. It's a good program designed for your benefit. Don't waste it.

I've talked to many high school students and many are afraid that a DOST scholarship will hinder them from making it well abroad. To those aspiring to become a DOST scholar, if you plan to leave the country indefinitely don't be one. Give your scholarship to someone else who might need it more. When the scholarship was created, it didn't have just you in mind. It was also designed so that someday scholars will bless the country. So don't be surprised if it will be difficult to leave the country when you're a DOST scholar. Despite my warning, please aspire to be a scholar if you need it. The money is a big help even if getting it may be delayed. Also, if you go out of the country for further studies, you could always obtain a legal bond like my wife did.

For those truly aspiring to become a DOST scholar, I hope you would also aspire to have a heart for other people, your countrymen, your country. I hope the scholarship won't just be a stepping stone to better your existence. I hope you will use it to be in a better position to help others. You may find a better place to live someday. But the truth is, this is truly the only country we've got.

Balili is only one of the thousands of S&T scholars that the country has produced. He is one of the best and most deserving Filipinos that DOST has helped reach their dream.

DOST and SEI shall continue to search for more Ryan Balilis that will provide hope and high level brain power towards a continuing quest for equitable and sustainable development.



By PAULINA P. NEBRIDA
S&T Media Service, DOST 1

A couple's **sweet** muscov

THE RENEWED interest in healthier food options both here and abroad caught the attention of Jaime T. Yadao, retired military colonel, and his wife, Natividad D. Yadao. The couple saw this back-to-healthy trend as a sure opportunity for their thriving business, the Yadao Enterprises, which specialized in vinegar and muscovado production.

Based in Luyan, Mapandan, Pangasinan, Yadao Enterprises has been producing sugar cane vinegar and wet muscovado, locally known as *pulitipot*, since the late 90s. It sold its products to walk-in clients and in the wet markets in Mapandan, Laoac, Lingayen and Maaoyag, Pangasinan, particularly to *bocayo* and *kakanin* makers.

As the demand for table muscovado grew, the couple, in 2006, decided to shift from wet muscovado to table muscovado sugar production. However, their facilities

were bare and not compliant with the requirements of good manufacturing practices (GMP).

"I learned that the Department of Science and Technology Region 1 was helping small and medium enterprises to be more productive, so I approached Engr. Felipe Andrada, the Provincial S&T Director of Pangasinan, for assistance in producing table muscovado sugar," quipped retired Col. Yadao.

Yadao could not have done a better move. Yadao Enterprises received DOST's assistance in 2006 through the Small Enterprise Technology Upgrading Program (SETUP). The company used the P530,700 financial assistance in acquiring facilities to increase production capacity and improve the quality of its muscovado. It installed bigger and more efficient cooking facilities. Yadao En-

terprises also acquired transfer pump, bigger settling tanks, working tables, stainless steel containers for sugar and juice, and other resources to make production easier and to comply with GMP. Further, DOST 1 assisted the firm by recommending appropriate label design.

In 2007, the couple launched Sugarcane Gold table muscovado sugar. Production in the initial year totaled about seven tons of muscovado sugar which rose to an average of 35 tons/year for the last three years, with gross sales climbing to 116% higher than wet muscovado production.

Table muscovado sugar accounts for 80 percent of the total products of Yadao Enterprises. The other Sugarcane Gold products, produced side by side with muscovado sugar, are the *pulitipot* and the sugarcane vinegar. Col. Yadao disclosed that these are



vado success

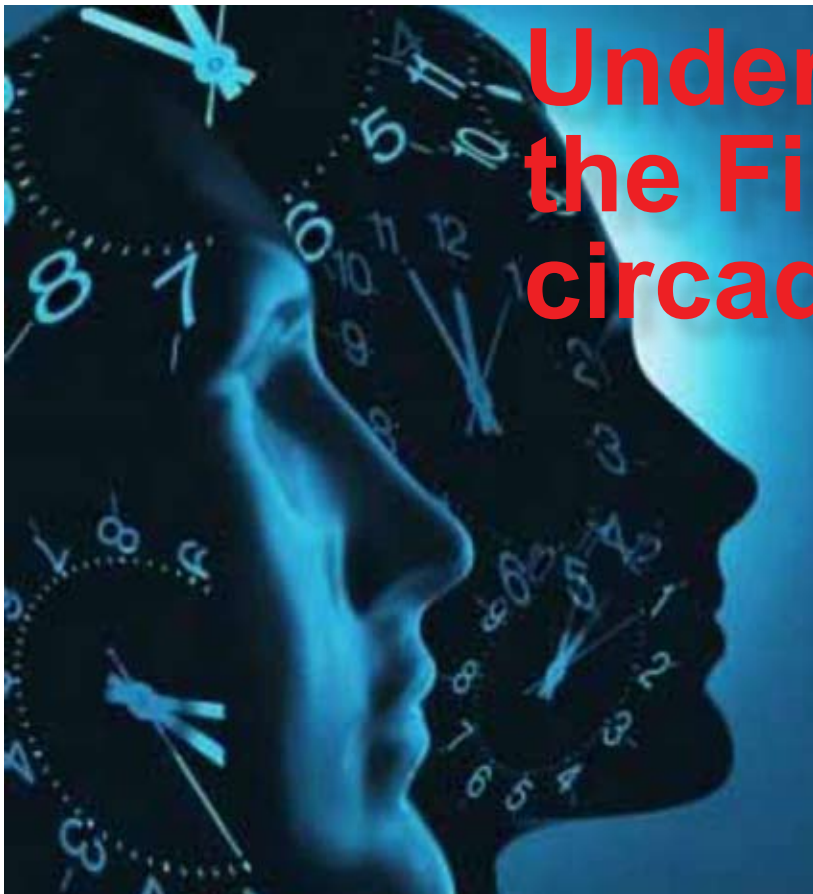
by-products of table muscovado sugar production.

One hundred percent of Yadao products are now being marketed in all branches of the two big malls in Pangasinan, and in popular supermarkets in Urdaneta City and Baguio City.

Yadao Enterprises graduated from the category of micro scale enterprise with an asset valued at P2,237,000 in 2007 to small enterprise with asset of P3,248,000 in 2009. To meet the growing demand for their products, the Yadaos put in additional capital investment to buy a heavy-duty sugar cane crusher and cooking facilities that will help increase their production capacity. All along, the Yadaos were able to hire six additional regular workers in the plant, increasing the number of their workers to 35.

Col. Yadao said that, at the moment, 40 percent of the sugarcanes produced in the 40 hectare-land he tills are still sold to sugar millers in Tarlac and Pampanga. He envisions though that, three years from now, 100 percent of the sugarcane he will produce will be processed inside Yadao's plant. He believes that DOST will continue to be the enabler in making his vision of producing more sweet muscovado happen.





Understanding the Filipino circadian clock

from the University of the Philippines Manila, and the Ludwig Maximilian University (Munich) that aims to determine the Filipinos' circadian clock in an entirely different work environment from those studied elsewhere. Knowing people's chronotype is important for both medical diagnostics and therapy.

Dr. Mendoza, a Senior Research Scientist of the Systems Biology Group of the Physics Department and Center of NanoScience, has helped UPM researchers in drafting project proposals for collaboration with LMU, which pioneered studies in human circadian clock and shift work in various countries and settings. Meanwhile, Dr. Darwin Dasig leads the UPM research team.

PhilSHIFT will study individual circadian clock differences and complexity through an online questionnaire called Munich Chronotype Questionnaire (MCTQ). Mendoza's group invites everyone to participate in this study by creating an account at <http://www.bioinfo.mpg.de/thewep/>.

Other than the PhilSHIFT project, Dr. Mendoza's stint as Balik Scientist was crammed with lectures and advisorships to students working on metabolic network and database of natural products. He also completed the project implementation designs for Virhalex information system and user manual, and computational requirements for the Philippine Genome Center health initiatives.

Other Balik Scientists who linked up with the academe early this year include Engr. Antonio Reyno, a Professional Officer at the School of Civil Engineering in University of Sydney, Australia, who helped Palawan State University; Shirley Chavez, a Senior IT Specialist at IBM Canada, who assisted UP Los Baños; and Dr. Reynaldo Garcia, Project Director of the BioGuide UK Project, who served the National Institute of Molecular Biology and Biotechnology in UP Diliman.

By **FRAMELIA V. ANONAS**
S&T Media Service, STII

WHILE EVERYONE else is asleep, Janet is up at three o'clock in the morning tapping at the keyboard to do her paper works. Late in the afternoon, her energy level tumbles and she has to hit the bed at eight in the evening.

Meanwhile, Amy wakes up unhurriedly when most people are already in frenzied work mode. Her energy level then peaks as afternoon warms up, and can work until the roosters broadcast a new day.

Larks like Janet and owls like Amy apparently have different behavioral and work patterns. Scientists say such patterns are influenced by their biological clocks, also known as circadian clocks.

"Understanding the circadian clock is particularly important in these industrialized and information-driven times," says Dr. Eduardo Mendoza, a visiting scientist under the Department of Science and Technology's Balik Scientist Program.

Circadian clocks regulate and modulate body functions including gene expres-

sion, body systems, behavior, and even how a person thinks.

"Along with the booming business process outsourcing industry in the country is the rise in the number of employees on shift work. Studies have shown that shift work is associated with health risks," Mendoza adds. "This shows that work schedule and a person's circadian clock have to match."

In the Philippines, call center employees work on a shift adjusted to offshore clients' time zone. In the case of US-based clients, that's about 8-12 hours behind Philippine standard time. This means call center agents work at night and catch up on sleep at day.

This odd work-sleep setup increases call center employees' vulnerability to cancer, cardiovascular, and gastrointestinal diseases caused by disrupted circadian clock.

Fortunately, Dr. Mendoza is leading a research team set to study the Filipinos' circadian clock. This interdisciplinary group called PhilSHIFT is composed of researchers

Solar power lights up PSHS-Diliman

SOLAR POWER lit up the main campus of the Philippine Science High School in Diliman, Quezon City, a joint effort of PSHS Batch 1985 that's celebrating its 25th year and the Wilfred and Bonnie Uytensu Foundation.

"Our batch wanted to donate something that would have far more lasting impact than the usual monetary or material donations," says batch president Farley Aguila. This led Aguila's batch to Brightbox Inc., a media and technology solutions company founded by batch mates Jason Hernando and Ramil Sevilla.

"For us, it was more than just providing the school with long-term cost savings associated with solar-powered lighting. We wanted the students to experience this innovative technology firsthand," Hernando and Sevilla explained.

"This also teaches them that

we are responsible for our future and the time to take charge is now," they added. They worked pro bono for the installation of solar panels and light-emitting diode (LED) lights that now illuminate the administration building and peripheral roadway of the campus.

PSHS Batch '85 and Brightbox found a generous project partner in Wilfred and Bonnie Uytensu Foundation, which shouldered the P2.5 million cost of photovoltaic (solar) panels, LED lights, batteries, controllers, cables, roofing, and other accessories.

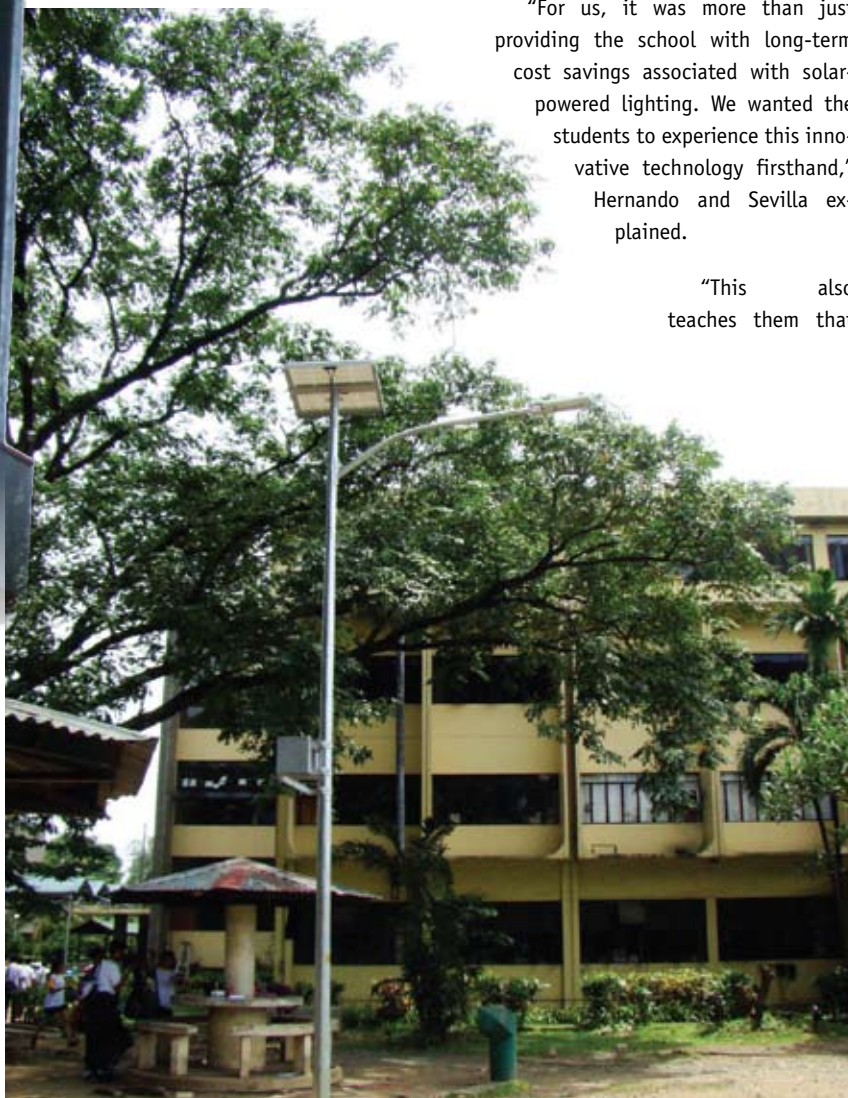
Wilfred Uytensu, Sr., founder of Alaska Milk Corporation and co-founder of the WBU Foundation, agreed to support the project because of his longstanding commitment to the education of Filipino youth. He passed away in April this year.

The project was officially donated to PSHS in a turn-over ceremony August 5. Wilfred Steven, current president and CEO of Alaska Milk Corporation, represented his father whose legacy of being visionary with a caring heart lives on through the project.

The energy efficient lights are in use for a few months now. "We have realized savings on electricity that we expect to increase steadily with time," PSHS Director Helen Caintic disclosed.

"It was a great help to us and the students during the recent nationwide power outage due to tropical storm Basyang. Imagine everyone's surprise when for miles, we were the only lighted structure not using generators."

All PSHS alumni are invited to view this lighting project on Sept. 4 during the alumni homecoming celebrations titled "Pisayvivor". For details, please visit <http://pshsnaa.roundtablelive.org/> or the official homecoming Facebook fan page <http://www.facebook.com/pages/2010-PSHS-Homecoming-Pisayvivor/135540709814182?ref=ts>.



NRCP'S



Science for Kids



By JOY M. LAZCANO
S&T Media Service, ST//



The National Research Council of the Philippines held a special learning activity called Science for Kids as part of the recent National Science and Technology Week celebration.

The event featured exhibits on science concepts and storytelling in an effort to raise appreciation of science and technology among the youth. It's now on its third year.

"We realized that an activity like this encourages and stimulates our youth to learn to love S&T. Magandang paraan ito upang makapagturo ng mga science and technology concepts and values in a fun way." NRCP-DOST Executive Director Hernandez said.

Story telling covered science lessons, values, and concepts on climate change, health and nutrition, environment, and rabies.

"I'm very happy that NRCP spent time and effort in gathering and transforming some science and technology concepts into very colorful exhibits. Kids would surely enjoy and learn from them," DOST Secretary Mario G. Montejo said.

NRCP-DOST is an attached agency of DOST that supports science researchers, scientists, and technologists in promoting basic research and development in the country.



DOST welcomes new Taiwan envoy. Department of Science and Technology Secretary Mario Montejo (right) exchanges S&T views with Taiwan representative Donald Lee (middle) and Taipei Economic and Cultural Office's Economic Division Director Filas Chen (left) in a courtesy call at the DOST main office in Bicutan, Taguig City recently. The Philippines and Taiwan started a vibrant S&T cooperation in 1997 that expanded over the years through TECO and the Manila Economic and Cultural Office. TECO's Commercial Secretary William Tsai (not in picture) joined the Taiwan group. **[Photo by Gerry Palad, S&T Media Service]**



Department of Science and Technology Secretary Mario Montejo listens to University of the Philippines President Emerlinda Roman who presented updates on current S&T initiatives of the premier state university. Roman's presentation was preceded by those of UP Vice President for Academic Affairs Amelia Guevara on R&D activities designed to produce optimum socio-economic impact, and UP College of Engineering Dean Rowena Guevara on the status of the Engineering Research and Development for Technology, a consortium composed of UP and six other leading universities that offer graduate and post-graduate education on various engineering fields. **[Photo by Gerry Palad, S&T Media Service]**

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SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
Department of Science and Technology Compound
Bicutan, Taguig City, Metro Manila, Philippines

Telefax (632) 837-7520
Email: managing_editor@stii.dost.gov.ph
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