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Dr. Gay Jane P. Perez



Dr. Rowena Cristina L. Guevara



Dr. Lucille V. Abad

*Excellence
in S&T*

Excellence in S&T



Excellence is something we all look up to. We want to be involved in or associated with things that are excellent. But how is excellence measured? Quite tricky for some, but for us at the Department, we live, breathe, and live with standards and performance measures such that anything should become measurable.

This is why the feats and successes of our official family are a source of pride to us. We know the rigors of measuring things, especially achievements and their impact. We recognize the value of being excellent, especially in the fields of science, technology, and innovation.

So in this issue we feature excellence among our people to inspire us more into doing in a better way what we are mandated to do. Our people's achievements and recognitions are shared among the DOST family, giving the Department and the whole science community the pride and the push that it greatly needs.

We also feature in this quarter women who had outstanding achievements in their respective fields. We want to show to the world that success is not genderized, and that successful scientists are not all in the mold of Einstein. They also come in Marie Curies, Caroline Herschels, Rosalind Franklins, and the likes.

May this issue encourage readers to excel in what they do and, more importantly, to make their achievements something that can help make this world a better place to live in.


Richard P. Burgos

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The program airs at 11:00 a.m. from Monday to Friday at the www.dostv.ph and on the new DOSTv mobile app. Its daily broadcast of livestreaming can also be accessed via www.facebook.com/DOSTvPH and www.dostvph/youtube.

Catch DOSTv from Monday to Friday, on PTV4 at 9:30 a.m.



Balitang RapiDOST

A flash report segment that showcases events, programs, and services of the DOST agencies and regional offices, as well as other news and updates on science and technology



DOST-PHIVOLCS update

A segment that showcases news and information related to earthquakes, volcanic eruptions, and natural hazards in collaboration with the DOST-PHIVOLCS



NegoSiyensya

A segment that showcases the success stories of micro, small, and medium enterprises and assisted communities that adopted the technology-based livelihood programs of the DOST



SineSiyensya

A documentary segment which features inspiring stories of individuals or groups benefiting from the DOST interventions



Sustansyarap

A segment that features nutritious Filipino recipes and cooking tips for a healthy lifestyle in collaboration with the DOST-FNRI



Sci-Facts

A segment that showcases facts and trivia related to science, technology, engineering, and mathematics



Weather Report

A day-to-day weather update and information in collaboration with the DOST-PAGASA



Global Science

A news segment about updates on science and technology (S&T) around the world



ExperTalk

A segment that showcases various interviews with experts in the field of S&T



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ABOUT THE COVER

In celebration of Women's Month this March, we feature on the cover three exceptional women of science and technology (S&T) whose achievements were recently recognized by various award-giving bodies. On the cover are Dr. Gay Jane P. Perez who is the first Filipino who have received the ASEAN-US Science Prize for Women, Dr. Rowena Cristina L. Guevara, DOST Undersecretary for Research and Development, who received from the Metrobank Foundation, Inc. the Award for Continuing Excellence and Service as one of 2019's Outstanding Filipino Teachers in recognition of her achievements as an educator, and Dr. Lucille V. Abad of the Department of Science and Technology-Philippine Nuclear Research Institute who was recently conferred as Scientist II under the Scientific Career System by the National Academy of Science and Technology. (Photos by Henry A. de Leon)

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DOST developed hybrid train to run on PNR tracks

By Zalda R. Gayahan, *DOST-MIRDC*

Photos from DOST-MIRDC



FOR MANY years, mass transportation has been very problematic not only for people living in Metro Manila but also for those who live and work in the suburban areas. For many, the most reliable mode of public transportation remains the train, including the classic trains of the Philippine National Railways (PNR).

Unfortunately, the PNR trains have their share of issues, too. These issues are felt by thousands of commuters who rely daily on the PNR's services.

Fret no more as a new set of trains will soon be plying the PNR train route—one that is proudly Philippine-made.

Introducing the Hybrid Electric Train

Through the partnership between the Department of Science and Technology-Metals Industry Research and Development Center (DOST-MIRDC) and the PNR, the Hybrid Electric Train (HET) will soon run the tracks of the PNR.

The HET was developed by the DOST-MIRDC to provide long-term technology-based solutions to the worsening mass transportation situation of the country. Likewise, it aims to raise the efficiency of the PNR's operations through reduced production and operational costs.

The DOST-MIRDC partnership with PNR sped up the eventful journey of the HET.

After its launch in 2016, the HET successfully conducted various tests and passed the reliability, availability, maintainability, and safety or RAMS testing in late 2018.

After the completion of the validation tests, the turnover of the HET prototype will follow.

"We are looking forward to this event as it will mark the beginning of better commuting experience for every Juan de la Cruz," said DOST-MIRDC Executive Director Engr. Robert O. Dizon.

"We are turning over the prototype to the PNR, but the technology is now ready for transfer to and commercialization by the private sector," added Dir. Dizon.

The HET prototype represents the technology proudly designed and developed by Filipinos. A product of the DOST-MIRDC's research and development initiatives, the HET technology is a breakthrough in its own right.

This home-grown technology, once given a chance, is going to make the Filipinos' public transportation challenges a thing of the past. Although the DOST-MIRDC and the PNR are still finalizing the schedule of remaining activities before the turnover of the HET prototype, the technology is good and ready.

In the pipeline of activities for 2019 is the PNR's validation of the RAMS testing which will

require 150 hours. After the validation, the HET prototype will finally be turned over to the PNR for commercial use to ply the Alabang-Calamba route.

The PNR's train service, the DOST-MIRDC's engineering and R&D capabilities, and the eventual involvement of the private sector for the mass production and wide-scale commercialization of the HET is projected to create the ecosystem needed to build and sustain a Philippine railway industry.

The upcoming turnover event of the HET prototype will indeed be the fruition of years of hard work and will set the scene for the realization of every Filipino's dream of a safe, comfortable, environment-friendly, and reliable public transportation.



Trike hailing app to benefit riders, trike drivers in Butuan

By Dionard N. Mendoza, DOST-Caraga
Photos from DOST-Caraga

A RIDE hailing app that will make getting a tricycle ride easier for commuters will soon be available in the City of Butuan in Agusan del Norte.

Transeek—short for “transportation seek”—a mobile application that commuters can use to book a tricycle ride will be available for Android smartphone users in Butuan by April or March this year according to its developers.

With the app, a user can book a trike ride and Transeek will look for the nearest available tricycle. The app makes use of an internet connection and a smartphone's Global Positioning System or GPS.

Transeek's developers—Angelito U. Cagulada Jr., Ernest Jay T. Cubillas, and Lemar M. Arnego—all from Caraga State University (CarSU), developed Transeek in 2018 as a start-up idea while enrolled in Navigatú, a Technology Business Incubation (TBI) hub funded by the Department of Science and Technology-Philippine Council for Industry, Energy and Emerging Technology Research and Development.

“We are now in the second round of deliberation with investors and partners, and hopefully we can operate by April or March,” said Cagulada during an interview.

Uplifting riders' and drivers' lives

Commuters in Butuan have the same sentiments: overpriced rides, rude drivers, and difficulty in getting a tricycle ride, especially during late hours.

The Transeek app hopes to address these issues by providing a safer and more convenient commute around Butuan City, and at the same time helping increase the income of tricycle drivers.

Based on a feasibility study among 100 tricycle drivers in Butuan City, the Transeek team found out that the average income of tricycle drivers ranges from PhP 400 to PhP 500 per day. With the help of Transeek, tricycle drivers can increase their income to more than 300 percent.

Transeek base fare for a maximum of three passengers per ride will be PhP 30. With a service charge of PhP 5, drivers will get PhP 25 for every ride from the system.

Transeek also hopes to decrease delays and standby hours of tricycle drivers in the city. “We have interviewed drivers during ‘TODA’ (Tricycle Operators and Drivers Association) meetings and most of them liked Transeek since they don't have to waste time roaming around to look for passengers,” said Cubillas.



Navigatú incubatees working on their start-up projects at their headquarters.

Drivers' registration to the system will be free. However, they will be required to comply with the insurance requirement, which most of the tricycle drivers in the city fail to adhere to.

Backed up by Navigatú

Navigatú is taken from the word ‘navigation’ and is inspired by Butuan's *balangay* boats. It offers idea incubation program and business skills courses for start-ups in the Caraga region.

The hub guided the Transeek team in developing the app and its business strategy. Just recently, the project allocated PhP 2M from investors to fund its full operation.

“Because of Navigatú, we were exposed to ideation, pitching, and marketing activities we never had in classrooms. It helped improve our potential for business,” said Cagulada.

The Transeek team is among the first batch of “incubatees” together with six more teams that are developing local IT solutions for agriculture and micro, small, and medium enterprises. Facilities such as computer units and administrative functions are provided for free at Navigatú enabling teams to develop their start-up ideas.

“Before, we just make IT systems because we like it. Now, it's more on solving problems or helping improve lives,” Cubillas said.

Engr. Jeffrey T. Dellosa, Navigatú project leader and CarSU's Innovation and Technology Support Office manager said that they try to provide an ecosystem in the university that enables students and anyone to transform their ideas into businesses. He added that at Navigatú, they give a venue for start-ups to acquire entrepreneurial skills and mindset while generating solutions to existing societal problems.

Elpsalms David J. Franco, Navigatú TBI manager, added that they want the incubatees to realize the value of their skills, sustain their businesses up to more than five years, and create more job opportunities.

Navigatú also conducts workshops on business and information, communication, and technology for schools in the region.

To learn more about the Transeek application and the team's activities, send them a message or follow them at <https://www.facebook.com/transeek/>.

For more information about Navigatú, visit <https://www.facebook.com/navigatu/>.



Caraga State University student Angelito U. Cagulada, Jr. (left) with teammate and information technology instructor Ernest Jay T. Cubillas (right) showing the Transeek mobile app in an Android smartphone.

HERDIN makes health research info available online

By Geraldine B. Ducusin, DOST-STII

ARE YOU a student, researcher or doctor looking for health research information? Do you know that there is an accessible database that could help you in your research?

Called Health Research and Development Information Network or HERDIN, this database is a one-stop, web-enabled, and categorized collection of health research information resources.

HERDIN provides more than 60,000 citation and bibliographic information of published and unpublished health researches in the country. It has more than 4,000 full-text articles of journals.

In 1987, the University of the Philippines Manila, Department of Science and Technology-Philippine Council for Health Research and Development, Department of Health, and Medical and Health Librarian's Association of the Philippines collaborated to put together HERDIN.


Before HERDIN, there was no single repository of health research information and outputs in the country. Information was all over the place and researchers are confined to do their researches by going to various institutions.

HERDIN made research available anytime and anywhere, online. It serves as a single portal for all health researches in the country. Researchers can access Herdin at www.herdin.ph for their relevant and timely health research information needs.



One of the HERDIN coordinators discusses the health research database at the University of Negros Occidental-Recoletos, Bacolod City. (Photo from DOST-PCHRD)



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Welcome to HERDIN

Health Research and Development Information Network (HERDIN) database is the national health research repository of the Philippines.

HERDIN database provides quick and easy access to **more than 50,000 citation and bibliographic information** from published (Philippine health research journals, conference/convention proceedings, International databases and publications) and unpublished (research institutions research projects and reports, thesis and dissertations) health researches in the country.

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(Screenshot of the HERDIN website <http://www.herdin.ph/>)

Graduate scholars get trained in nanosat eng'g

By F. Mara M. Mendoza, *STeP-UP Project*
Photos from STAMINA4Space

EIGHT GRADUATE scholars were awarded a scholarship grant by the Department of Science and Technology-Science Education Institute (DOST-SEI) to undergo a graduate program on nanosatellite engineering.

DOST Secretary Fortunato T. de la Peña personally congratulated the eight scholars during a kickoff meeting on 18 January 2019 at the Meralco Hall, Electrical and Electronics Institute at the University of the Philippines in Diliman, Quezon City.

On September 2018, the Space Science and Technology Proliferation through University Partnerships (STeP-UP) Project opened the call for scholarship applications for the Master of Science and Master of Engineering in Electrical Engineering under the nanosatellite engineering track.

The nanosatellite engineering track includes the development of one unit, 10 cm x 10 cm x 10 cm cube satellites (cubesats), space environment testing of the cubesats (engineering model and flight model) at the Kyushu Institute of Technology in Japan, launch of the cubesats via the International Space Station, and cubesat operations.

Among the many applications, eight were eventually selected and awarded the scholarship provided by the DOST-SEI. The first batch of graduate students are Gladys Bajaro, Derick Canceran, Bryan Custodio, Lorilyn Daquioag, Marielle Magbanua-Gregorio, Christy Raterta, Judiel Reyes, and Renzo Wee.

The eight scholars came from different backgrounds and sectors—the academe, industries, and even from the armed forces. This is in line with the project's principle of valuing diversity and working with people from multiple disciplines.

During the kickoff meeting for the scholars, DOST Sec. de la Peña also acknowledged the importance of diversity and how bringing people from various backgrounds is inherent to the establishment of a sustainable local ecosystem for space technology in the country.

"All of you [scholars] are from different geographical locations and come from diverse backgrounds, and we intended for that to happen," Secretary de la Peña said in his message to the scholars.

The STeP-UP Project, one of the four component projects of the Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) Program, aims to utilize PHL-Microsat outputs and further small satellite technology in the country through research and development, capacity



DOST Secretary Fortunato T. de la Peña meets the scholars.

building of local researchers and scientists, and by providing technical know-how.

STAMINA4Space is aimed at further developing deep expertise that enable and

sustain the growth of a local scientific-industrial base in space technology and applications in the Philippines. Through science-based policies and programs supported by innovations in space technology, STAMINA4Space intends to contribute to building a resilient Filipino society and a productive, knowledge-based economy.

Other guests present during the kickoff meeting were: DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development Executive Director Dr. Enrico C. Paringit, DOST-Advanced Science and Technology Institute Director and STAMINA4Space Program Leader Dr. Joel Joseph S. Marciano, Jr., UP Electrical and Electronics Engineering Institute (EEEI) Director Dr. John Richard E. Hizon, PHL-50 Project Leader and UP EEEI Associate Professor Dr. Marc Caesar R. Talampas, STeP-UP Project Leader and UP EEEI Assistant Professor Paul Jason Co, and faculty and team members of the STAMINA4Space Program.



DOST-PCIEERD Executive Director Enrico C. Paringit (left) encourages the scholars to keep things running on the ground as they are the first batch in the country to pioneer the local development of a cube satellite; DOST-ASTI Director Joel Joseph S. Marciano, Jr. (right) tells the scholars to build bridges and be trained on cross-cutting skills to reach out to other people in different disciplines.



Secretary de la Peña with the faculty and staff of the STAMINA4Space Program.



DOST Secretary Fortunato T. de la Peña (seated, middle) and other officials from DOST, DLSU, UPLB, and UP Manila pose for a photo with the first batch of graduate scholars under the DOST Scholarship Offerings for ASEAN Researchers at CLM.

DOST ASEAN scholars earn advanced degrees in local top universities

By Marco D. Melgar; DOST-SEI

Photos from DOST-SEI

TOP UNIVERSITIES in the country are currently hosting scholars from Myanmar and Cambodia under the “DOST Scholarship Offerings for ASEAN Researchers at Cambodia, Lao PDR, and Myanmar (CLM).”

Said scholars, currently taking their master’s and doctorate programs, are sponsored by the Department of Science and Technology (DOST) as part of the Department’s commitment to the ASEAN’s goals in building up human resource in science and technology.

DOST Secretary Fortunato T. de la Peña described the program as “pioneering” for the Philippines, which normally is the one benefitting from scholarships offered by more developed countries.

“I think this is the first time that the Philippines is offering graduate scholarships to ASEAN partners and we are happy to extend this assistance to Cambodia, Lao PDR, and Myanmar,” he said. “Through this effort, we will be able to bridge the gap between ASEAN member states in terms of science, technology, and innovation.”

In a recent meet and greet event, the scholars thanked DOST and the Philippines government for letting them pursue their development in top universities here, which they said will be very much helpful for their respective countries.

The scholarship program is exclusively offered to citizens of the three countries. The DOST-Science Education Institute (SEI) led the coordination with the embassies of the three countries and universities where the scholars will pursue their programs

In 2017, DOST-SEI together with university representatives visited the three countries to interview applicants, during which 14 master’s students and four doctorate candidates qualified.

About 14 scholars, currently hosted

at De La Salle University, University of the Philippines (UP) Diliman, UP Los Baños (UPLB), and UP Manila, are taking up degrees in the fields of genetics, entomology, environmental science, environmental engineering, agronomy, public health, clinical medicine, electronics and communications engineering, energy engineering, and chemical engineering, among others. Lao PDR, although included in the program, has yet to send scholars.

DOST has earlier committed PhP 50M to the ASEAN Committee on Science and Technology for Human Resource Development to implement the program.

DOST Assistant Secretary for International Cooperation, Dr. Leah J. Buendia said that the initiative is a big help in raising a critical mass of MS and PhD graduates in CLM, which will ultimately help them address challenges in their countries.

Meanwhile, UPLB Graduate School Dean Dr. Jose V. Camacho Jr. said that the program is an important move for the Philippines especially

in the internationalization of its degree programs. He then urged DOST to level up its scholarships to maintain the positive trend and recommended sending Filipinos to joint dual degree programs in strategic countries.

Sec. de la Peña encouraged the scholars to really give back to their countries and spread the word among their colleagues to invite them to pursue graduate degrees in the Philippines.

“We plan to extend this program and we invite you to serve as our promoters in your respective countries so that we can welcome more CLM scholars in the future,” said the DOST secretary.

Other DOST officials present during the event were Undersecretary for Scientific and Technical Services Dr. Carol M. Yorobe, DOST-Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development Executive Director Dr. Reynaldo V. Eborra, and DOST-Science Education Institute Director Dr. Josette T. Biyo. Representatives of the delivering universities were also present.



Twelve of the 14 graduate scholars from Cambodia and Myanmar visited DOST-SEI for a meet-and-greet with DOST and university officials on 15 January 2019.

Innovators recognized at DOST-TAPI Awards

By Jund Rian A. Domingo, DOST-TAPI

EIGHT OUTSTANDING program beneficiaries of the Department of Science and Technology-Technology Application and Promotion Institute (DOST-TAPI) received awards in six categories during the recently concluded first-ever DOST-TAPI Awards. The awarding was held during the Institute's 32nd anniversary on 25 January 2019 at the Philippine International Convention Center, Pasay City.

Supported by the DOST-TAPI's various programs, these beneficiaries have successfully contributed positive impacts not just in the country's socioeconomic development but also in various priority areas specified by the DOST.

"The strategic designs of our programs support our stakeholders through the provision of both technical and financial assistance in whichever phase they are in the commercialization path," said DOST-TAPI Director Edgar I. Garcia.

The awards were categorized based on the various programs and services of DOST-TAPI and were further divided into two major categories: the major awards and special awards.

Gawad Masaligan

Millennium Tooling and Fabrication Services, Inc., which is into manufacturing of precision and semi-precision components for semiconductors, electronics, and other industries, was the recipient of the major award category, Gawad Masaligan award.

DOST-TAPI provided financial assistance of Php 1.9M for the acquisition of one laser machine that improved the company's production efficiency by 20 percent.

The Gawad Masaligan, which stands for Maasahan sa Lipunan, Galing sa Negosyo, given by the Venture Financing Program, recognizes the program's best beneficiary in terms of repayment of the assistance provided to them. Good repayment status reflects the program's effect on the firm's operations including sales and profit increase, employment generation, and market expansion.

The Venture Financing program accelerates the commercialization of innovative, new, and emerging technologies by providing the necessary funding support to start-ups and technology-based expansion projects.

Gawad Katha-Likha

Also a major category, Gawad Katha-Likha was given to inventors and researchers who have disclosed their valuable knowledge on their filed intellectual property through the assistance of the Intellectual Property Rights Assistance Program (IPRAP).



DOST Secretary Fortunato T. de la Peña (second from left), Undersecretary for Research and Development Rowena Cristina Guevara (leftmost), and DOST-TAPI Dir. Garcia (rightmost) join Prof. Fortunato B. de La Peña, Jr. (second from right) as he receives the Gawad Katha-Likha award for Individual Inventor Category during the 1st DOST-TAPI Awards on 25 January 2019 at the PICC. (Photo from DOST-TAPI)

The IPRAP provides assistance in securing IP protection, including funding support for payment of filing fees for utility model registration or patent applications by Filipino inventors and researchers.

The award was further categorized into three: research and development institute (RDI), researcher, and individual inventor categories.

For the RDI category, the DOST-Industrial Technology Development Institute (ITDI) received the recognition. The DOST-ITDI is the agency mandated to conduct technology transfer and commercialization and undertake applied research and development in the fields of industrial manufacturing, mineral processing, and energy.

Meanwhile, Dr. Edna M. Nava of Capiz State University, Fisheries and Food Research Development Center, was awarded the Gawad Katha-Likha in the researcher category. The focus of Dr. Nava's research is in food, agriculture, and fisheries.

For the individual inventor category, Assistant Professor Fortunato B. de la Peña Jr. of the University of the Philippines Diliman, College of Fine Arts, received the award for his "flat to functional" flat-pack, self-assembly furniture invention. The flat-pack furniture design is a practical choice for people in need of affordable and almost ready to use furniture as it does not require adhesives or hardware fasteners to assemble.

Gawad Dagta, Dagitab, and Dagisik (Special Awards)

The following awards were given to beneficiaries of the Technology Innovation for Commercialization (TECHNICOM) program who have successfully contributed to some of the priority areas of the DOST particularly in the agriculture, industry, and health sectors.

The TECHNICOM program provides development support to commercially-viable projects through financial and technical assistance in fast-tracking the transfer and commercialization of research results.

The awardees were selected based on the novelty, market potential, commercialization status, and socioeconomic impact of their projects and technologies.

The Gawad Dagta or Dakilang Ambag sa Teknolohiya at Siyensiyang Agrikultura was given to the most promising technology that made a significant contribution in agriculture, aquaculture, and natural resources.

The award went to BioGroe® Technology by Dr. Ronilo P. Violanta. BioGroe® Technology is a microbial fertilizer containing plant-growth-promoting bacteria that enhances root and vegetative growth and increases crop yield at lower production cost. The technology has secured a local patent, fairness opinion report, and a licensing agreement.

Meanwhile, the Gawad Dagitab or Dakilang Ambag at Gabay sa Industriya saTulong

NEXT PAGE



DOST Camiguin launches Bigmo complementary food

By Julie Anne H. Baculio, DOST-X

LGU-Mahinog Mayor Rogerio C. Acle holding the BigMo Kroepeck. (Photo from DOST-X)

THE DEPARTMENT of Science and Technology (DOST) continues its fight against malnutrition in the country by continually innovating healthy foods for nutritionally deficient children.

To address malnutrition, the Department initiated a project on the development of complementary food, or any food or liquid other than breast milk that are fed to children six to 35 months old. Children of this age need additional iron, zinc, other nutrients, and energy from other food sources aside from breastmilk or formula.

One of the complementary foods developed by the DOST-Food and Nutrition Research Institute is BigMo Kroepeck, or the community-based rice mongo, which was recently launched in Camiguin. The Provincial Science and Technology Center (PSTC) of Camiguin, together with the local government unit (LGU) Mahinog, launched the BigMo Kroepeck complementary food on 21 January 2019.

LGU Mahinog Mayor Rogerio C. Acle, Municipal Health Officer Dr. Juanita K. Llacuna, Councilor Sheila G. Babanto for Health and Sanitation Committee, other municipal councilors and barangay health workers, and PSTC-Camiguin Director Miriam A. dela Plaza were present during the complementary food launching.

The launching coincided the first day of feeding for the 72 school age children with nutritional needs in Camiguin.

FROM PAGE 11

ngTeknolohiya at Agham para sa Bayan was given to an emerging technology that has impacted the economy particularly in the industry and energy sector.

Vigormin: Organo Mineral by Dr. Merlinda A. Palencia received the award in this category. Vigormin: Organo Mineral is a mixture of naturally-occurring organo-minerals that neutralize strong odor from septic system, wastewater, and landfills, offering a sustainable solution to water pollution. The technology can be accessed through a spin-off company, Envigor, which has a nationwide distribution.

Lastly, Biotek-M Dengue Aqua Kit by Dr. Raul V. Destura bagged the Gawad Dagisik or Dakilang Ambag sa Imbensyon at Siyensiyang

Pangkalusugan. The award was given to a health-related technology and innovation that has huge potential for successful commercialization.

Biotek-M Dengue Aqua Kit is an efficient confirmatory test for diagnosis of dengue infection within the first five days of illness, with the result available in an hour or less. The diagnostic kit promotes less admission for dengue-suspected cases that can save resources for both hospitals and patients. Biotek-M, through Manila HealthTek Inc., is already available and accessible in the market.

Gawad Salin

The Gawad Salin is an award given by the Technology Transfer Day Project to the best

Technology Transfer and Business Development Officer who facilitated the most number of technologies transferred to the intended market.

Conceived in 2016, the Technology Transfer Day brings locally-developed technologies to possible technology investors and adopters.

Dr. Danilo N. Pilar of the DOST-Metals Industry Research and Development Center (MIRDC) received this award. Dr. Pilar heads the Technology Diffusion Division of the DOST-MIRDC. With his years of public service, Dr. Pilar has demonstrated excellent leadership in bringing technological advancement and innovative solutions to globally competitive metals, engineering, and allied industries.

Chicharon maker gets crunchier chances through SETUP

By Julie Anne H. Baculio, DOST-X

Photos from DOST-X

ASIDE FROM the famous pastel and peanuts, chicharon (deep fried pork belly or pork rinds) is also considered as one of the most-wanted “pasalubong” from Region X.

The increase in demand for chicharon resulted in a similar increase in the number of chicharon varieties produced in the market.

SLERS Industries, Inc. stepped up to the trend by upgrading to all-new equipment provided by the Department of Science and Technology (DOST) through its Small Enterprise Technology Upgrading Program (SETUP).

With the project called “Upgrading of Chicharon Production through Automated Packaging”, the company acquired the automatic packaging machine with multi-head weigher, vertical form fill seal machine, bucket type conveyor, discharge conveyor, and hot stamp ribbon coder.

This company cracks into the chicharon business and, using technology, crunches tons of pork rinds into the market and pasalubong bags of satisfied customers.

The company had its first run on using the equipment during the turnover ceremony on 31 January 2019 at their manufacturing site in Manolo Fortich, Bukidnon.

Among those who attended the ceremony were Mercedes Fidelita P. Mejia, owner of



QUALITY CRUNCHIES. The machines ensure that the packed chicharon have high quality and are of the same weight.



CHICHARON AHOY! The crunchies are weighed and fed into the machine before packaging.

SLERS Industries Inc., and Lesli N. Uy, Science Research Specialist II of the Provincial Science and Technology Center (PSTC) in Bukidnon.

“We are very happy today because it is the day that we are finally going to be operating the new equipment which we were able to acquire through the assistance of the SETUP program of the DOST,” Mejia said.

With the assistance, the company can now produce larger quantities of chicharon to cope with the rising demands of its buyers.

“This ensures that we will be able to continue our production without having to really put out a lot of stress on our finances,” Mejia added.

DOST is encouraging all micro, small, and medium scale enterprises to avail of the SETUP program to improve their operations and thus boost their productivity and competitiveness.

Those interested in the SETUP program may reach out to the nearest DOST regional office or PSTC.

DOST Caraga arms disaster mgt officers with vital skills

By Aliana Gene E. Sarmiento, *DOST-Caraga*

Photos from DOST-Caraga



DOST-Caraga Regional Director Dominga D. Mallonga (second from the left), with Assistant Regional Director for Field Operations Division Ricardo N. Varela (leftmost) and Chief of Technical Support Services Division Engr. Noel M. Ajoc (rightmost), hands in the check for project fund to Bayugan City Sanguniang Bayan Member Kirk A. Asis

TO ENSURE use of locally produced technologies and support to S&T human resource, especially in the countryside, the Department of Science and Technology-Caraga partnered with local government units (LGU) like Bayugan City in bringing science, technology and innovation efforts closer to the people.

Bayugan City LGU, represented by Sangguniang Bayan Member Kirk Asis, received Php 1M worth of project fund from DOST-Caraga for the project "Support to R&D Initiatives on Biodiversity and Environmental Management" on 8 January 2019.

Problems like threat to public health due to environmental degradation and no well-established sewerage systems in public market and slaughterhouse pose critical challenges to Bayugan City. The Provincial Science and Technology Center of Agusan del Sur has established partnership with LGU Bayugan to help mitigate the problems with DOST's technical assistance and database of technologies.

The project aims to install Vertical Helophyte Filter System and eco-friendly septic tanks, both wastewater treatment systems, in identified sites in Bayugan City. The Science and Technology Academic and Research Based Openly Operated Kiosks or STARBOOKS, a DOST-developed information repository that features digital books, audios, and videos containing S&T information, will also be installed in computer libraries of schools in Bayugan City. The LGU committed to counterpart another Php 1M for the purchase of hard disk drives and personal computers for STARBOOKS.

DOST Caraga Regional Director Dominga Mallonga looks forward to the project's benefits to the communities, public market, slaughterhouse, and other environmentally compromised areas, and public schools in Bayugan City. Director Mallonga believes in partnership with agencies and doing counterpart to promote science, technology, and innovation efforts.



Dir. Mallonga discusses the line-item budget and the project's activities with SB Member Kirk A. Asis.

Kirk Asis expressed LGU's gratitude to the project and committed to work for the expected outputs. The funds is allocated from DOST Caraga Local Grants-In-Aid budget. Bayugan City is a fifth class city in the first district of Agusan del Sur.



Evelyn Fajardo gives food handling tips to participants. (Photo from PSTC-Negros Oriental)

Food handlers learn the basics of food safety

By Sean Adrian T. Guardiano, *PSTC-Negros Oriental*

SOME 100 participants, mostly food handlers and processors from manufacturing firms and the local government unit of La Libertad, learned the basics of food safety at a seminar held in La Limar Beach Resort in La Libertad, Negros Oriental on 8 February 2019.

Organized by the Department of Science and Technology Provincial Science and Technology Center in Negros Oriental, the seminar equipped local food handlers with the skills and knowledge on basic food safety being the frontliners in food preparation.

During the short but very informative workshop, Gemma B. Kitane of Silliman

University (SU) explained to participants the importance of food safety, food hygiene, current good manufacturing practices, legal framework, and the emphasis of farm-to-fork principle.

Also discussed were topics on food hazards, personal hygiene and prevention of cross-contamination in food. The speakers also made participants understand the legal basis of food safety, traceability, food allergen, shelf life of products, retention of product sample, and recall program.

"The purpose of this activity is to widen our learning on food safety and preparation.

Our work is very critical since we are the direct link from food to consumers. Let us all try to be open-minded and incorporate the useful recommendations advised to us," Kitane advised.

Kitane and Evelyn Fajardo, also from SU, are pioneering members of the Negros Oriental Food Safety Team. Their field of expertise include food safety, hygiene, Good Manufacturing Practice, and Hazard Analysis and Critical Control Points. Since then, the team has been involved in numerous food safety trainings, product development, product packaging and labeling, among others.

Research suggests use of digitized arts in HIV/AIDS awareness

By Rodolfo P. de Guzman, DOST-STII

RECENT RESEARCH aimed at increasing the public's level of awareness on Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) suggests the use of digitized arts as an effective information campaign tool.

Said research conducted by Dr. Brian Saludes Bantugan, regular member of the National Research Council of the Philippines (NRCP) of the Department of Science and Technology (DOST), explored the use of arts as an effective communication tool to convey the health implications of HIV/AIDS, its social dimension, its medical treatments, and all scientific facts about the disease.

Dr. Bantugan stressed that massive information campaign should be implemented using more appealing and creative ways like the digitized arts. This is because most of the HIV/AIDS cases affect the youth aged 15-24, who are already very sexually active and at the same time are more appreciative of digitized arts. In fact, the youngest reported AIDS patient is 17 years old.

Further, Dr. Bantugan said that the country has one of the lowest rates of HIV/AIDS infection but has one of the fastest growing number of cases worldwide since the first case was reported in 1984.

Findings of said research were presented in a symposium organized by DOST-NRCP, titled "Communicating Basic Research Results to the People: Enhancing Public's Level of Awareness on HIV/AIDS through Digitized Arts."

The forum, held on 13 February 2019 at the Philippine International Convention Center in Pasay City, aimed to communicate and disseminate for possible adoption, some

public policies based on the DOST-NRCP funded research on the production and use of digitized artworks in the campaign to increase the public's level of awareness on HIV/AIDS.

More social research needed

In his talk during the forum, DOST Secretary Fortunato T. de la Peña shared that the DOST-NRCP is the only research council that covers and supports research activities in all disciplines from physical sciences to social sciences and the humanities.

"I am happy to know that many agencies and organizations have collaborated to address the issues about HIV/AIDS like the Department of Health, Department of Education, the National Youth Council, legislators, and communicators because it is important for the public to know the right information to prevent the disease from affecting more people particularly the youth," said Sec. de la Peña.

The science chief also said that the Council, with its member-researchers, is involved in different research activities like those on drugs for analysis and traceability and to certain extent on drug addiction, alternative medicine, environment, and other fields.

"We would also like to encourage our researchers to conduct more studies on other social concerns like teenage pregnancy, depression and suicide incidences, and on children's health," Sec. de la Peña added.

Arts for HIV/AIDS awareness

In his keynote message, Dr. Gundo Aurel Weiler, country representative of the World Health Organization, shared the many creative ways of

implementing effective information campaigns to increase public awareness on the health risks of HIV/AIDS being done by organizations in different countries.

The forum also provided an opportunity for celebrities from the arts sector to share their experiences and their advocacies on HIV/AIDS prevention and information. In attendance were multi-awarded film/TV actress and artist Elizabeth Oropesa-Freeman who donated her own paintings for the cause, 2014 Bb. Pilipinas-International Mary Anne Bianca G. Guidotti, film/TV and theater artist Phillipe "Phi" S. Palmos, Outrage magazine editor-in-chief Michael David C. Tan, artist and Culture and Arts Managers of the Philippines member Jabar R. Esmael, director/writer Crisaldo V. Pablo, film director/writer/producer Emmanuel A. Dela Cruz, and Red Ribbon Care Management president Ramon "Ico" Rodulfo.

Lending support from the DOST community were DOST Undersecretary for Research and Development Dr. Rowena Cristina L. Guevara, DOST-NRCP President Dr. Ramon A. Razal, DOST-NRCP Executive Director Dr. Marieta B. Sumagaysay, DOST-NRCP Chair of Humanities Dr. Adelaida F. Lucero, DOST-Philippine Council for Health Research and Development Executive Director Dr. Jaime C. Montoya, DOST-Food and Nutrition Research Institute Director Mario V. Capanzana, and DOST-Science and Technology Information Institute Director Richard P. Burgos.

An arts exhibit with paintings and creative works from different stakeholders were mounted as part of the one-day forum. Some 60 people likewise availed of free HIV/AIDS screening during the event.



Science chief supports extensive research. Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña says that the DOST-NRCP extensively supports research activities in various fields from the physical sciences to social sciences and humanities to find solutions to pressing problems affecting the country, one of which is about the health risks of HIV/AIDS. (Photo by Rodolfo P. de Guzman)

DOST reg'l offices meet tech gens

By Jund Rian A. Doringo, DOST-TAPI

Photos from DOST-TAPI



DOST-TAPI conducted the ROs Meet Tech Gens on 04 February 2019 at the Crimson Hotel, Alabang, Muntinlupa City.



Pelletizing Machine



LPG-Fired Spray Dryer



Salt Iodizer Machine



Rice Transplanter



Salt Washer Machine



Rice Harvester

AS A preparatory event to the Technology Transfer Day, the Department of Science and Technology-Technology Application and Promotion Institute (DOST-TAPI) organized the "ROs Meet Tech Gens" on 04 February 2019 at the Crimson Hotel Filinvest City, Alabang, Muntinlupa City.

The event served as a venue to bring together technology generators and DOST regional offices for a market pitching of DOST funded and generated technologies.

DOST Undersecretary for Research and Development Rowena Cristina L. Guevara said that each region has different needs and that the technologies to be offered must meet the regions' unique needs.

"We want to bring the technologies closer to the ones who make decisions so that our technologies can find home to those who are capable of adopting them," added Guevara.

Fourteen technologies from the DOST-Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development, and seven technologies from the DOST-Forest Products Research and Development Institute were presented during the event.

Moreover, DOST regional directors and technical staff were able to choose technologies that can be beneficial to their regions for future adoption and commercialization.

The mechanics of the Technology Transfer Day were likewise presented during the event, including the signing of term sheets, Fairness Opinion Board evaluation, issuance of Fairness Opinion Reports (FOR), and Technology Licensing Agreements (TLA).

"Through the Technology Transfer Day, the Institute has issued 72 FOR, 31 of which successfully signed the TLA since 2016," said DOST-TAPI Supervising Science Research Specialist Caesar Angelito E. Arceo.

Moreover, six technologies were commercialized by seven adoptors all over the regions from 2016 to 2017. Among the commercialized technologies include the portable pellet machine by the Central Luzon State University, salt iodization and salt washer machines by the DOST-Industrial Technology Development Institute, and liquefied petroleum gas fired spray dryer, rice transplanter, and rice harvester attachment for hand tractor by the DOST-Metals Industry Research and Development Center.

A total of 110 participants attended the event.



*CVCIEERD members at the façade of DOST VII after the MOA Signing held at the Elena O. Diola Hall of DOST-VII.
(Photo from PSTC-Negros Oriental)*

Central Visayas consortium formally launched

By Engr. Reinhold Jek Y. Abing, DOST NegOr

IN AN effort to promote science and technology applications in Central Visayas for the industry, energy and emerging technology sector, the Department of Science and Technology (DOST) Region VII, in collaboration with the Innovation Council, has established a consortium with various higher education institutions (HEIs) in the region.

Dubbed as CVCIEERD which stands for Central Visayas Consortium for Industry, Energy and Emerging Technology Research and Development, it is a collaborative network among universities and colleges. These institutions have expertise in the disciplines of engineering and related sciences. The consortium will serve as conduit for research funds from the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), among other things.

To formally forge the consortium, a Memorandum of Agreement (MOA) was signed by the different HEI representatives on 7 February 2019 at the Elena O. Diola Hall of DOST-VII in Lahug, Cebu City.

Present during the MOA signing were DOST-VII Regional Director Engr. Edilberto L. Paradela, DOST-VII Assistant Regional Director Engr. Jesus F. Zamora, Jr., Provincial Science and Technology (PSTC)-Negros Oriental Director Atty. Gilbert R. Arbon, Bohol Island State University

(BISU) President Dr. Regucuvilla A. Pobar, Vice President for Research and Development Dr. Zina D. Sayson, and Director of Research and Development Dr. Proceso M. Castil; Cebu Institute of Technology University President Engr. Bernard Nicolas E. Villamor, Foundation University Chancellor for Academic Affairs Faisal M. Alih, and Holy Name University Vice President for Academic Affairs Bro. Carl Milos R. Bulilan.

Also in attendance were Negros Oriental State University (NORSU) President Dr. Joel P. Limson, Silliman University Vice President for Development Prof. Jane Annette L. Belarmino, Clifford Kilat of St. Paul University Dumaguete, University of Bohol President Dr. Victoriano B. Tirol III, University of Cebu Chief Legal Counsel Atty. Manuel Elijah J. Sarausad, University of San Carlos President Fr. Dionisio M. Miranda, University of San Jose-Recoletos Dean Engr. Jeremiah A. Badana, and Engr. Randy K. Salazar, University of the Philippines Cebu Chancellor Atty. Liza D. Corro, and University of the Visayas Director for Research and Development Dr. Brian A. Vasquez and colleague.

In his message, DOST-VII Regional Director Paradela expressed his gratitude to the different representatives of HEIs, especially the presidents, who personally attended the MOA signing. He then challenged the participants to make innovative researches relevant to the needs of Central Visayas.

On the first three years of operation, NORSU will handle the chairmanship of CVCIEERD with DOST-VII as co-chair. After said period, the body will select another HEI member which will handle the chairmanship for another three years.

Prior to the MOA signing, DOST-VII Assistant Regional Director Engr. Zamora discussed the contents of the MOA. PSTC-Negros Oriental Director Atty. Arbon presented the proposed CVCIEERD 2019 Research and Development (R&D) Agenda and Strategic Plan, which was the result of the strategic planning workshop by HEI representatives last quarter.

In September last year, DOST-VII through PSTC-Negros Oriental invited DOST-PCIEERD and HEIs in the region to meet in NORSU in Dumaguete City to discuss the possibility of reconstituting the CVCIEERD which has not been functional since the 90s.

With the success of the September meeting, a Strategic Planning Workshop was held two months later in Tagbilaran City, Bohol which drafted the 2019 R&D Agenda and the contents of the MOA.

The Innovation Council will help fund the operational expenses of the consortium. It will also help capacitate researchers of the member institutions in proposal preparation to make proposals more appealing for funding, among other things.

DOST rallies support for space science collab

By David Matthew C. Gopilan, DOST-STII



DOST Secretary Fortunato T. de la Peña acknowledges researchers and business executives for their support and openness to the government's efforts and business opportunities in space science. (Photo from DOST-STII)

THE DEPARTMENT of Science and Technology (DOST) recently called for support and collaboration of business groups from the aerospace, semiconductor, and electronics industries as the Department showcased its homegrown technologies and initiatives in space applications development.

In a recent business forum on space science and technology that showcased the initiatives, DOST Secretary Fortunato T. de la Peña said, "We at the DOST are hopeful that this event will give rise to the birth of a local space industry in the Philippines."

The science chief cited Diwata 1 and 2, as well as Maya-1, as examples of locally made satellites that became possible through the expertise of local researchers and partnership with the local industry.

Sec de la Peña emphasized that images generated from the satellites could in itself be a business too. These images can be useful for land use planning, resource assessment and management, national security, hazard mitigation, agriculture, among others.

The business sector can be largely involved in the space industry through the following sectors: aerospace or airplane and spacecraft creation, communications and navigation, equipment and supplies, consultancy, research, and additional services.

"That is why we want to create an environment for collaboration," he said. "We cannot do this alone, nor our experts in the academe by themselves, nor our combined

efforts (with the academe)," the Secretary added.

"We need you, our partners from the industry, to make the country emerge as one of the space-faring countries reaping the benefits of space technologies," Sec. de la Peña stressed.

Produce what industries need

Meanwhile, business leaders John T. Lee, chair of the Aerospace Industries Association of the Philippines and Dan C. Lachica, president of Semiconductors and Electronics Industries in the Philippines Inc., discussed the current industry scenario and how their sectors would take part in the emerging industry.

"We do not have space electronics as a sector in itself – this is a recognition and admission that we haven't considered seriously until now," Lachica said.

He explained that the country needs more engineers, in addition to data scientists and computer programmers inclined to space science. He also added that universities should produce graduates skilled with what the industry needs to advance the industry.

Lachica also expressed his willingness to sit down with the academe and the government in drafting a roadmap for government-academe-industry direction for a vibrant, local space industry.

"Instead of doing everything, we partner; we cannot do everything," Lee said while proposing a "from buying to making" paradigm shift. He also mentioned that the local

aerospace industry now faces a growing aircraft demand and production backlog.

"We are trying to figure out how to grow the industry by growing the supply chain, providing also the manpower needed. There is a need and a huge gap. And the industry needs a lot of people who knows what aerospace is," Lee said. He cited aircraft and wiring assemblers and engineers as possible entry points for students wanting to enter the industry.

DOST now ready for space agency

DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) Executive Director Dr. Enrico C. Paringit described the eventual creation of the Philippine Space Agency (PhilSA) as the culmination of the government's preparation in putting up a strong space science program.

"It is high time now for our partners in the industry to join us in this journey to conquer space," he said.

"We are not just building a space business for the Philippines but we could also deliver the same products and services to our neighboring countries," said Dir. Paringit.

Meanwhile DOST Undersecretary for Research and Development (R&D) Dr. Rowena Cristina L. Guevara said that the DOST has already released PhP 7.5B worth of R&D investment from 2010 to 2018. The investment produced about 1,000 projects and 5,400 local specialists capable of working for a space agency.

She added that there have been 25 space science facilities, all funded by DOST. "All of these could be soon under the PhilSA," Usec. Guevara said.

She also pointed out that capacity building—including identifying and training people as well as putting up facilities—is the government's role. Meanwhile, retaining these people is primarily the industry's role, she added.

DOST's 'Omics' program ushers personalized medicine for Filipinos

By Allyster A. Endozo, DOST-STII



Panelists at the “Talakayang HeaRT BEAT” technology media conference (from left to right): Dr. Rowena Cristina L. Guevara, Dr. Jaime C. Montoya, Sec. Fortunato T. de la Peña, Dr. Cynthia P. Saloma, and Dr. Rody G. Sy. (Photo by Henry A. de Leon, DOST-STII)

THE RIGHT medicine with the right dose to the right Filipino. This, in essence, is how Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña described the ultimate goal of the government’s “Omics” program.

DOST presented the “Omics” program dubbed “Omic Technologies for Health: ‘Lunas na Sakto sa Pilipino’” during the “Talakayang HeaRT BEAT” held on 27 February 2019 at the La Breza Hotel in Quezon City.

“Omics” pertains to disciplines in the field of biology that end in “-omics” such as genomics, proteomics, metabolomics, and the like. Said disciplines involve studies on different biological molecules, including their roles, relationships, and actions.

The “Omics” program will enable Filipino health professionals to develop new medications, diagnostics, public health surveillance systems, and even population databases for forensic and paternity analyses that are tailor-made for the nation’s unique ethnic, dietary, and environmental characteristics.

“Recent studies show that everyone reacts differently to medicines and therapies. Since most medications are formulated abroad, this population is adjusted to meet the needs of the people of its country of origin,” Sec. de la Peña explained.

The increase in budget allocation for the country’s omics R&D—from PhP 31M in 2014 to PhP 312M in 2018—resulted in DOST’s major achievements in recent years.



Omics-oriented technologies that the DOST plans to integrate with the government's forthcoming universal healthcare system. (Photos from DOST-PCHRD).

These include successful genetic studies among different Negrito groups, leptospirosis patients (the largest of its kind in an Asian population), and type 2 diabetics (involving 59,425 participants since 2014).

Another milestone is the establishment of the Php 456M University of the Philippines-Philippine Genomics Center (UP-PGC) in Diliman, Quezon City that provides next-generation sequencing services for sectors like agriculture, industry, and the environment. Similar units will be likewise launched in Miagao, Iloilo and Davao City.

Moreover, the “Omics” program will also enhance clinical practice guidelines and policies, particularly to address the country’s leading

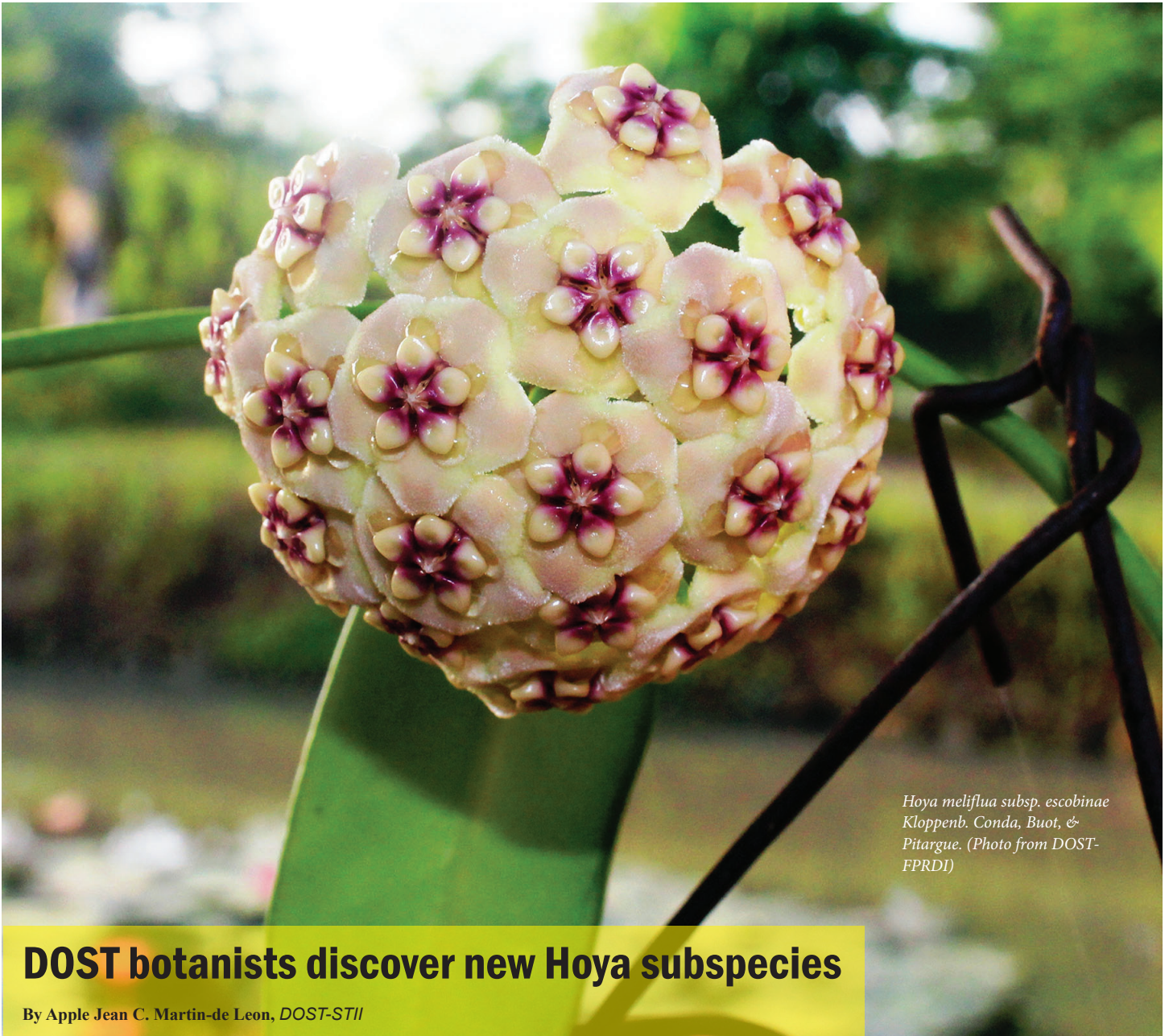
causes of mortality—cardiovascular diseases, cancer, pneumonia, and HIV/AIDS.

“As our economy becomes more robust, the nature of our workforce continues to evolve [across] different age groups, social status, gender, ethnicity, social values, and lifestyle choices. Now, the people in the [middle-income] group are becoming more at risk to [these] lifestyle diseases,” Sec. de la Peña elaborated.

DOST officials are banking on greater investment towards personalized, omics-oriented therapies, equipment, and infrastructure. More investments in this area will help raise the nation’s universal healthcare system and be at par with those in developed countries.

The “Talakayang HearT BEAT” is the second in a series of DOST’s technology media conferences promoting local science and technology projects and other endeavors.

Joining Sec. de la Peña were DOST Undersecretary for Research and Development Dr. Rowena Cristina L. Guevara, Executive Director of the DOST-Philippine Council for Health Research and Development Dr. Jaime C. Montoya, executive director of UP-PGC Dr. Cynthia P. Saloma, and Dr. Rody G. Sy, project leader on cardiovascular diseases at the Philippine General Hospital. Dr. Eva Maria Cutiongco-de la Paz, executive director of the National Institutes of Health, served as the event moderator.



Hoya meliflua subsp. *escobinae*
Kloppenb. Conda, Buot, &
Pitargue. (Photo from DOST-
FPRDI)

DOST botanists discover new Hoya subspecies

By Apple Jean C. Martin-de Leon, DOST-STII

KNOWN FOR its ball-like cluster of waxy flowers, the hoya plant is a favorite among many flower enthusiasts especially in Asia. Although there are already a great variety of officially recognized hoya plants, a new subspecies was recently discovered by botanists from the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI).

Hoya meliflua Merr. subsp. *escobinae* Kloppenb. Conda, Buot & Pitargue was added to the International Plant Names Index (IPNI) in 2016. It was discovered by DOST-FPRDI botanists Jennifer M. Conda, Fernando C. Pitargue Jr., and Dr. Ramiro S. Escobin.

“Our team collected cuttings of the plant from the Quezon Protected Landscape in 2012,” recalled Conda. Immediately after the first flowers bloomed, samples were sent for examination to Dr. Dale Kloppenburg, a renowned Hoya expert from the United States.

The sample sent was confirmed as a new subspecies, which showed several similarities to *Hoya meliflua* Blanco ex Merr., but with some notable differences. Results were published in Hoya New, a publication devoted to studies about hoyas, and listed in the IPNI,” Conda explained.

Conda further described the calyx lobes (sepals) of the new subspecies as long and tongue-like compared with the broadly oval to oblong

shape of the *Hoya meliflua* Blanco ex Merr. The newly discovered Hoya subspecies was further described as having lobes that are elongated with serrated edge, in contrast to the latter’s broadly triangular lobes.

“Of the 109 hoyas species recorded in the country, 39 species and 3 subspecies were found in the Quezon province. It is no wonder that another subspecies was uncovered in the same area,” explained Conda.

Also called wax plant, wax vine, wax flower or shooting star, hoyas are Asian native plants that usually creep or climb. They have thick, waxy leaves and a cluster of flowers that holds up to 40 individual flowers firmly packed together.

Discovering the country's "miracle fruit"

By Allyster A. Endozo, DOST-STII

YOU'VE PROBABLY had an apple or an orange or bananas, but chances are, you haven't tasted, seen, or even heard of "calabash"—the so-called "miracle fruit" of the South.

Calabash (*Crescentia cujete* L.), a green, round fruit native to Central and South America, is much-sought after in Mindanao and, increasingly, in other parts of the Philippines for its numerous health benefits. Called "kalbas" or "cujete" in the Philippines, the fruit looks like a coconut with its hard green shell and its white, moist, and soft flesh.

It has been used as folk remedy for respiratory ailments like asthma, colds, and coughs. Extracts from its bark are also used as anti-inflammatory and antiseptic while those from its leaves are used to alleviate blood pressure and stroke complications.

Its so-called healing wonders made folks call it the "miracle fruit."

Lately, recovery stories spread online and via word-of-mouth. It is slowly becoming popular among diabetics and late-stage cancer patients as a therapeutic tonic drink—prepared by heating the pulp and then sold in bottles.

"The current retail price of the fruit juice usually varies from PhP 300 to PhP 550 per liter, if it is bought on site. Recently, we buy our juice online from small family-run enterprises, so additional cost for shipping is incurred," said Dr. Hiyas A. Junio, a metabolomics researcher at the University of the Philippines (UP) Diliman.

Food for thought

Getting a sundry of benefits at relatively low cost sounds too good to be true, however, as there is very little recently published information on calabash's secondary metabolites—substances responsible for its medicinal properties.

"As with all of my research, it was my curiosity that prompted me to take a closer look at *Crescentia cujete*," Dr. Junio revealed. "Like any scientist, my first concern is if there is a basis for its 'anti-cancer' effect, and second, if the juice is actually safe for consumption."

To put these claims to the test, Dr. Junio and her colleagues at UP Diliman's Institute of Chemistry—Klidel Fae B. Rellin and Dianne D. Dasmariñas—collected fruit samples from Sasa, Davao City and from the Department of Science and Technology-Philippine Textile Research Institute compound in Bicutan, Taguig City.



C. cujete fruit collected from DOST-PTRI compound in Bicutan, Taguig City (A), with deep-purple pulp after prolonged exposure to air, and a bottle of the "miracle fruit" juice from Davao City (B).

More good than bad

Analyses revealed that both the pulp and the juice contain beneficial molecules that are important in the formation of an antibacterial agent called phytoalexin as well as vitamin B1 (which prevents DNA damage and thereby complications in the brain, gut, heart, and muscles).

In particular, the pulp contains oxalic acid derivatives and esters that aid in fighting fungal infection, abating aluminum toxicity, and protecting cells from free radical damage.

However, the pulp was found to contain benzene and its derivatives like toluene and o-xylene—both industrial contaminants that can cause narcosis, low infection resistance, and even anemia and cancer in the long run.

Fortunately, the juice contains none of those harmful substances as they seem to be subtly eliminated by processing during manufacture.

"[VOCs] considered as air pollutants were not detected from the commercial juice [and], thus, are not actually ingested. Heating the fruit

pulp actually removes these VOCs," Dr. Junio stressed. "It is highly likely that ingestion of these compounds will occur if the fruit pulp is consumed without heating."

Moreover, the juice contains compounds that aid in preventing colon cancer, regulating blood sugar, promoting growth of good intestinal bacteria (particularly *Bifidobacterium* spp.), and managing asthma and allergies.

Lastly, its antimicrobial property was found potent against *C. albicans*, *E. coli*, and *S. aureus*—common pathogens responsible for yeast infection, food poisoning, and various skin conditions, respectively.

Is it a "miracle" after all?

Preliminary data seem to support some of calabash's purported health benefits, although further studies are warranted to firmly establish its celebrated reputation as a "miracle fruit." Even so, notwithstanding all the hoopla that surrounds it having a drink of the fruit juice certainly wouldn't hurt your body, your budget, or your conscience.



Radiating with Achievement

By Sarah May R. Pascual and Marjorie Y. Facuri, *DOST-NAST*
Photos from *DOST-STII*

Radiation chemist Dr. Lucille V. Abad receives Scientist II status, lauded as DOST woman leader

With her years of exemplary work as a radiation chemist, Dr. Lucille V. Abad of the Department of Science and Technology-Philippine Nuclear Research Institute was recently named as Scientist II under the Scientific Career System (SCS).

Dr. Abad is one of the seven scientists who took their oath as newly conferred and upgraded scientists on 10 December 2018 at the Eastwood Richmond Hotel.

DOST Undersecretary for Scientific and Technical Services Dr. Carol M. Yorobe, on behalf of DOST Secretary Fortunato T. de la Peña, commended the newly conferred scientists for their hard work and undying commitment to gaining tangible results through their research. Usec. Yorobe added that all



► Dr. Lucille V. Abad (second from left) with DOST Secretary Fortunato T. de la Peña (second from right), DOST Undersecretary for Scientific and Technical Services Dr. Carol M. Yorobe (rightmost), and Director Elizabeth A. Fontanilla (leftmost) of the DOST Administrative and Legal Service.

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of the awardees are worthy of being recognized for their outstanding achievements because of the benefit of their researches and research outputs to society at large.

Usec. Yorobe emphasized the need for more scientists in the SCS and expressed the DOST Secretary's hope that the newly conferred scientists will encourage more researchers to pursue the same path as they did.

Aside from her conferment as Scientist II, Dr. Abad was also recognized as one of the eight women leaders in DOST during the Department's celebration of the Women's Month on 19 March 2019.

A specialist in radiation chemistry, she served as lead country and national project coordinator for various projects by the International Atomic Energy Agency involving radiation processing for agricultural,



► Dr. Abad during the ATOMEXPO Awards 2019 in Sochi, Russia. (Photo from Rappler.com)



► Dr. Lucille V. Abad (middle) receives her conferment as Scientist II. With her are DOST Undersecretary for Scientific and Technical Services Carol M. Yorobe (right), and Alicia dela Rosa-Bala (rightmost) of the Civil Service Commission.

► Plaque of recognition awarded to Dr. Abad as one of the women leaders of DOST.



industrial, and medical purposes.

Among Dr. Abad's major projects in research and development was the carrageenan plant growth promoter that helps increase the yield of rice and other crops; and the hydrogel wound dressing for burns, wounds, and bedsores.

Dr. Abad's work on carrageenan has been recognized both locally and internationally. The latest of her feats is the recognition of her project as one of the top five finalists for projects under the category of "Non-energy Nuclear Technologies: Improving the quality of life" during the ATOMEXPO Awards 2019. The awarding was held in Sochi, Russia on 15 April this year.

Dr. Abad was also a recipient of the Civil Service Dangal ng Bayan Award in 2012.

The Future is Female

By Kristelle Nicole G. Chavez, **DOST-PCIEERD**
Photos by Henry A. de Leon, **DOST-STII**

*ASEAN-US Science Prize for Women Awardee
Dr. Gay Jane P. Perez talks about women
empowerment in the science industry*

For a field that is literally as vast as space, Filipina scientists are gaining territory in what is usually a male-dominated discipline.

Newly minted ASEAN-US Science Prize Awardee Dr. Gay Jane P. Perez highlights the need for more female representation in the science industry, especially in the Philippines.

Perez said women scientists bring as much significance to the table like their male counterparts. “I’ve read somewhere that there really is something different about what can be

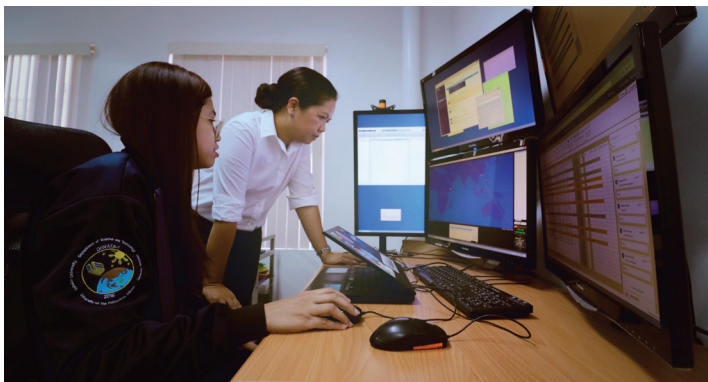
contributed by the women workforce. The biology is different—the brains of men and women are really different to start with,” she said.

Perez won the award for her work on the Department of Science and Technology (DOST)-funded project “Drought and Crop Assessment and Forecasting” which predicts drought occurrences using satellite and field data, giving headway for farmers to prepare and mitigate its effects on them.

In a press statement, US Head of

Delegation Ryan Washburn lauded Perez’s work as it harnesses space science to mitigate the onslaught of an impending dry spell.

“The United States is proud to support women across ASEAN working to harness the power of science, innovation, and technology to achieve excellence in the field of precision agriculture. We are excited to recognize and reward talented women, like Dr. Perez, as role models for other scientists, both men and women alike,” he said.



Higher (education)

Dr. Perez recounts how her early days as a scientist entailed juggling in between teaching at the University of the Philippines National Institute of Physics and obtaining her postgraduate degree.

"I started as a faculty member in 2003 at the Physics Department while also getting my Master's and PhD, so I was just an instructor then. After I got my PhD, I had to go for my post-doctoral fellowship [in NASA]," shared the award-winning scientist.

It was through the DOST that Dr. Perez was able to make her mark in the global stage where she was exposed to a complex working environment that she wanted to adopt in the local field.

"Actually, a lot of people have been asking me why I went back here given that I was already working in NASA," she shares. "But what I've experienced there is something that I would really want to see here in the Philippines. One can say that 'what

they have in NASA is actually good, why didn't you stay there?' Or one can also say that 'what they have is better than ours and hopefully we can also achieve that.' I opted to tell myself the latter," she emphasized.

After her NASA fellowship, Dr. Perez became part of the Philippine Scientific Earth Observation Microsatellite (PHL-Microsat) Program in the University of the Philippines Diliman, which brought to life the proudly-Pinoy satellites Diwata-1 and Diwata-2.

Along the process, the growing awareness and recognition in the local space industry also came as a surprise to Dr. Perez who has always visualized the Filipino space tech scene to be at par with the rest of the world.

"Working on the PHL-Microsat program, I can see us getting there, and how we can get there."

Taking into consideration the recent launch of PHL-Microsat's the

successor Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) Program, as well as the ongoing initiatives for the space agency bill, Perez added, "I've realized that the things I've seen and experienced in NASA can also be done here in our country."

Perez expressed joy that Filipina scientists are increasing in number in the space science industry with Dr. Maricor N. Soriano joining her in STAMINA4Space.

"Historically, it was just me—one out of five. Now, we are two," Perez said. They are also joined by the remarkable female engineers who were part of the development team of the two Diwata satellites. "There was only one female engineer out of nine who built the Diwata-1 satellite, whereas in Diwata-2, we have two. Still, these numbers are not as high," she added.





(Reaching) further

Following her recent win comes the new mission to ensure that her research outputs be a useful asset in the use of remote sensing for precision agriculture.

“It’s now much publicized, so there is a greater need to transition the output of this research [into something] that will be greatly used by the farmers,” Perez said.

But apart from that, Perez also wants to push more female scientists to share their own stories and encourage the youth to find their inner love for science, making it a possible career path for them in the future.

“It still hasn’t changed that much as compared to our time. There was still a low appreciation on scientists as a viable profession for women,” she shared, looking back on the science industry being a male-dominated field then and now.

“Young girls, they would rather pursue other disciplines where they know someone or which they can relate to. For example, they would say, ‘Our neighbor is like this. I want to be like her when I grow up.’ They only knew a handful of women in this kind of field. Even myself, when I was a child, I barely knew any Filipina

scientist except for those that I’ve seen in magazines. But they don’t seem real. The situation is still the same today, unfortunately,” Perez sighed.

“We just need to talk about it. We need to share our stories as much as we can,” she added. “Maybe [we can do that] through fairs and other events. DOST has been doing so through its national and regional S&T fairs, but I think there is still an opportunity to target a larger scale. Perhaps visit some schools.”

Much more than a complex discipline, Dr. Perez also shared that pursuing a career in science translates to a unique experience that gave her fulfillment.

“I can’t say that I have the best job in the world, but for sure, I enjoy it..” she said.

“They say that if you want to get rich, don’t be a scientist. But it’s a very fulfilling job, you get to learn new things, and every day is different. I interact with different people, I do new things, so it’s very exciting and full of good surprises.”

“The Philippines is now entering an era where science is greatly recognized. This is the best time to do science. There is an overflowing

support [from the government], so you would want to be ahead of the game,” she said.

Faster (towards national development)

The DOST-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD) expressed support over fielding more Filipino women scientists into perceived male-dominated careers.

“As the Innovation Council of DOST on industry, energy and emerging technologies, we take the lead in ensuring gender balance in the researches that we fund. We are at the forefront of ensuring that we produce more Gay Jane Perezes and Maricor Sorianos from our roster of researchers in the country by providing equal opportunity in getting access to research funds. We believe that the representation of Filipinas in our scientific community in key and strategic positions will take our research agenda higher, further, and faster towards national development,” DOST-PCIEERD Executive Director Dr. Enrico C. Paringit said.



Continuing Excellence

By Kristelle Nicole G. Chavez, *DOST-PCIEERD*
Photos by Henry A. de Leon, *DOST-STII*

*DOST Usec for R&D recognized as one of
2019 Metrobank Foundation Awardees*

Dr. Rowena Cristina L. Guevara, the Department of Science and Technology (DOST) Undersecretary for Research and Development (R&D) and is also a current Professor XII at the University of the Philippines (UP) Diliman, was one of the ten Outstanding Filipino Teachers for 2019 who received the “Award for Continuing Excellence and Service” (ACES) from the Metrobank Foundation, Inc. (MBFI) on 21 February at the Le Pavilion, Metropolitan Park, Pasay City.

Usec. Guevara, along with the other Outstanding Filipino Teacher ACES awardees, were recognized for their “continuing excellence in the performance of their respective professions, substantive contributions to their chosen disciplines, and sustained outstanding service to



their respective institutions and communities.” With their utmost commitment to their duty as public servants, these exemplary Filipino men and women teachers were distinguished based on “the recognitions they received at the national and international levels, the

kind of mentorship they have instilled among their peers, and the concrete impact they have left upon their respective spheres of influence and communities.”

The renowned DOST Undersecretary for R&D was the youngest and first woman Dean of the

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UP Diliman-College of Engineering, where she received both her undergraduate and Master's degree in Electrical Engineering. She received her PhD in Electrical Engineering from the University of Michigan as a DOST-ESEP scholar. She was also a DOST scholar in high school and in college. Aside from the MBFI distinction as one of the Outstanding Filipino Teachers, she has also received several awards in the fields of engineering and education.

True to her commitment in advancing R&D through education, Usec. Guevara was the proponent and the first program leader of the Engineering R&D for Technology (ERDT), a consortium for graduate engineering scholarship program of the DOST since 2007. She led the drafting of the Harmonized National



► Usec Guevara as she is fondly called in the DOST system, is a hands-on leader who thrives in a quick-paced environment.



R&D Agenda 2017-2022 and the DOST policies on technology transfer, which are now being implemented.

In addition to the ten Outstanding Filipino Teachers, MBFI also recognized 40 more distinguished public servants consisting of 12 soldiers, ten police officers, two journalists, five artists, and one scholar who were all 2019 ACES recipients. To recognize their institutional partners from various sectors of the society, MBFI awarded them the “Partner in Empowerment, Advocacy, and Commitment to Excellence” or PEACE awards to selected institutions from the government, non-government, socio-civic, international NGOs, media, and business sectors.

The MBFI was established sixteen years after its founder, Dr. George S. K. Ty, created the Metropolitan Bank & Trust Company on 1979, with the vision to be the “country’s premier corporate philanthropic foundation contributing a significant impact on social development. As a development organization, MBFI aims to uplift individuals and the sectors they represent and strategically link with institutions for a shared purpose.”



USHERing Smart Settlements

By Kristelle Nicole G. Chavez, *DOST-PCIEERD*
 Photo by Henry A. de Leon, *DOST-STII*

WSA 2019

DOST-funded technology wins World Summit Awards

Besting 430 nominations from 182 participating countries, a Department of Science and Technology (DOST)-funded technology, was selected as one of the 45 Global Winners of the World Summit Awards (WSA).

Called the Universal Structural Health Evaluation and Recording System or USHER, the project is the only Southeast Asian winner in the category “Smart Settlements and Urbanization.”

The USHER technology won the award for its cost-effective 24/7 structural health monitoring system for buildings and bridges that enables economical and hassle-free compliance to the National Building Code. It is composed of an accelerograph sensor and a web portal system that can be installed in buildings of all types, allowing building managers to monitor the structural integrity of the building.

Compared with other existing products, USHER streamlined and tailored the system to fix the local market at a remarkably lower cost while still offering a complete solution to ensure business continuity. In 2018, USHER won the Best R&D Award during the 8th Anniversary of DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

DOST-PCIEERD Executive Director Dr. Enrico C. Paringit lauded the USHER team for bagging the award and showing to the world how local technologies can be world-class.

“We congratulate USHER for showing to the world what we can do here in the Philippines and how we can optimize innovation to the benefit of the Filipino people. USHER’s win is an icing already to the number of lives that they have been saving with the technology they developed,” Dir. Paringit said.



USHER Lead Inventor Dr. Francis Aldrine A. Uy (leftmost) of Mapua University and Chief Technology Officer Engr. Donato G. Santiago (rightmost) pay a courtesy call and present their award to Philippine Ambassador to Portugal Celia Anna Ferla (middle).

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USHER Lead Inventor Dr. Francis Aldrine A. Uy expressed elation over the recognition given to them by the WSA. “Now we are more than ready to distribute USHER in the Philippines and we hope that with this international confirmation, we patronize technologies of our own people, made by our people, for our people in USHERing a safer and more resilient Philippines,” he said.

As one of the winners of the WSA, the team was invited to attend the WSA Congress to personally receive their award. They also had the opportunity to network with the other global winners, speakers, jurors, and international guests. The DOST-PCIEERD provided financial

support for the attendance of the two members of the team to the WSA Congress.

Among the perks of being a WSA winner is the integration of USHER into a network of internationally recognized digital content developers. The team will also have access to the WSA community of global experts and industry leaders in over 180 countries and special placement on WSA website, Youtube channel, and social media promotion.

The WSA is a non-monetary award system with focus on sustainable knowledge transfer through a worldwide network. Winners benefit not from a one-time financial reward, but a lifelong partnership and integration.

Further, the WSA is a highly diverse and democratic award system that selects and promotes the world's best digital innovation with impact on society. Running for 15 years, it has become a quality seal for digital content with societal impact. WSA is also a nomination-based award system.

For a technology to be included in the winners' circle, it has to be nominated by a WSA National Expert as the best national digital application in one of the eight categories based on the following criteria: content, functionality, design, technology, and innovation.



► USHER Lead Inventor Dr. Francis Aldrine A. Uy (right) presents his technology at the 2019 World Summit Awards.



Excellent Science for Excellent Service

By Dianne Marie L. Tating, **DOST-PCIEERD**
Photo by **DOST-PCIEERD**

The Philippines, as one of the riskiest countries when it comes to natural disasters, has been exposed to countless hazards and casualties for the past years.

Back in 2013, the Department of Science and Technology (DOST) brought to the fore DREAM (Nationwide Disaster Risk and Exposure Assessment for Mitigation) which makes use of Light Detection and Ranging (LiDAR) technology to generate highly detailed flood maps of the country's major river systems using aerial images. DREAM is a component of the DOST's flagship program, Project NOAH or Nationwide Operational Assessment of Hazards.

Through the flood hazard maps of the DREAM program, the local government of Marikina was able to provide timely storm surge warnings to its residents during the Habagat onslaught and Typhoon Maring in 2013. Likewise, residents of Bicol, Southern Luzon, and Western Visayas had enough time to take immediate precautionary measures against possible storm surge during typhoons that battered said areas in 2014 and 2016. Because of this, many Filipinos were spared and a significant decrease in casualties was achieved.

Given the reputable contributions of the DREAM program, it was recognized not only in Asia as recipient of the Asia Geospatial Excellence Award in 2014, but also in the world as it bagged the Geospatial World Excellence in Policy Award in the same year. The Philippine government also recognized these awards through the creation of House Resolution No. 194 Resolution Commending the DOST for Winning the Prestigious Geospatial World Excellence in Policy Implementation Award for 2014.

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After just a year, another recognition was achieved by the Phil-LiDAR 2: Nationwide Detailed Resources Assessment using LiDAR which took off from the DREAM program bringing home the Asia Geospatial Excellence Award for 2015. The same program was also bagged the Gawad Pangulo's Award for Excellence in Public Service in 2017. These awards entail exemplary innovations and practices in the global geospatial industry.

"These awards show that the international community acknowledges our local capability-building efforts to attain self-sufficiency when it comes to dealing with natural hazards and disasters. This award will also motivate the DREAMers to further their efforts in giving timely and relevant information to the public," said Dr. Enrico C. Paringit, the man behind the multi-awarded DREAM program, who is also now the executive director of DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

Offshoots of DREAM and Phil-LiDAR programs

With the vast potential of these programs' generated information resources and several applications, new technology ventures came about. One of these is Project DIME or Digital Imaging for Monitoring and Evaluation, a directed R&D project of the University of the Philippines (UP) and DOST-Advanced Science and Technology Institute (ASTI) with funding support from DOST-PCIEERD. Project DIME monitors selected high-value government projects by comparing fund use against physical accomplishment through the use of space and geospatial technologies such as LiDAR as well as other datasets of DREAM and PHIL-LiDAR 1&2 (i.e., high-resolution maps). It recently received the Presidential Anti-Corruption Commission Silver Award on 8 March 2019.

More than flood hazard maps produced with the use of LiDAR technology, fire hazard maps are also being developed through a UP Cebu-

led project titled FireCheck: Urban Fire Hazard Mapping and Fire Spread Modelling which aims to prevent the occurrence of fire through proper information.

Another remarkable venture application of DREAM and PHIL-LiDAR's output is DOST-ASTI's DATOS (Remote Sensing and Data Science) Help Desk which aims to produce and communicate relevant disaster information to agencies and key end-users using different geographic information system, remote sensing, and other data science techniques.

Coming from the same program is Geo-SAFER Mindanao program which intends to continue the Phil-LiDAR 1 Program through the coverage of the remaining flood hazard maps in the country using the LiDAR technology. Implemented by Mindanao's four Higher Education Institutions and funded by DOST-PCIEERD, the program aims to establish the MinDSET Center or Mindanao Data Science, Engineering and Technology Center, an online facility meant for the collaboration and access of scientific data among stakeholders and end-users of the program.

These programs and projects of the DOST all redound to the achievement of one of the Department's desired outcomes—disaster preparedness. And it is evident that these undertakings are continuous efforts to engineer solutions of safeguarding and improving the lives of people, thereby achieving national development.

Indeed, with excellent science combined with excellent efforts of the government, there will be nothing but excellent service to save and improve lives.



► Dr. Ariel C. Blanco (fourth from right), project leader of PHIL-LiDAR 2: Nationwide Detailed Resources Assessment using LiDAR received the Asia Geospatial Excellence Award for 2015 last 29 September 2015 during the Inaugural Session of GeoSmart Asia 2015 Conference in Kuala Lumpur, Malaysia.

Honoring our Pinay Scientists

Text and photos by Allan Mauro V. Marfal, DOST-STII

*DOST honors Pinay scientist
contributions in the
Women's Month Celebration*

Sky Jabson (of the DOST-Philippine Council for Health Research and Development) dresses up as "Wonder Woman" during the event to represent the strength and power of Pinay scientists.

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In the celebration of the International Women's Month, the Department of Science and Technology (DOST) gave the spotlight to eight Filipina scientists who made significant impact in improving the products and services of different sectors in the country.

During the department's celebration of Women's Month held on 19 March 2019 at the Hotel Jen in Pasay City, DOST recognized the efforts and contributions of Dr. Lucille V. Abad, Dr. Annabelle M. Briones, Dr. Maria Leonila P. Bautista, Dr. Josette T. Biyo, Dr. Esperanza O. Cayan, and Dr. Lilia T. Habacon.



► Secretary de la Peña (middle) and other DOST officials with the awardees (L-R): Dr. Annabelle M. Briones (DOST-ITDI), Dr. Maria Leonila P. Bautista (DOST- PHIVOLCS), Dr. Lucille V. Abad (DOST-PNRI), DOST Administrative and Legal Services Director Elizabeth T. Fontanilla, DOST Undersecretary Carol M. Yorobe, Executive Dr. Lilia T. Habacon (DOST-PSHSS,) Dr. Josette T. Biyo (DOST-SEI), and Dr. Esperanza O. Cayan (DOST-PAGASA).



DOST Secretary Fortunato T. de la Peña shares the agency's commitment in creating ideal environment for Filipina scientists to develop innovative solutions to some of the country's pressing problems during the Women's Month celebration held on 19 March 2019 at the Hotel Jen in Pasay City.

Dr. Abad is currently the chief of the Atomic Research Division of DOST-Philippine Nuclear Research Institute. Among her major projects were on carageenan as plant growth promoter that could help in increasing the yield of rice and other crops, and Hydrogel Wound Dressing for burns, wounds, and bedsores.

Meanwhile, Dr. Briones is the newly-appointed Director of DOST-Industrial Technology and Development Institute. She spearheaded the development of various innovative technologies focusing on the use of carageenan from Philippine Eucheuma species for pharmaceutical, medical, and industrial applications, development of DOST Mosquito Ovicidal/Larvicidal Trap System, studies on

adrenergic drug and dietary fiber from calamansi wastes, biofuels and alternative energy, and on cloning and sequence analysis of cDNAs encoding precursors of starfish asterosaps.

Another awardee is Dr. Bautista, a chief science research specialist from DOST-Philippine Institute of Volcanology and Seismology who led the collaborative disaster risk management projects and the conduct of PHIVOLCS-developed software training called Rapid Earthquake Damage Assessment System.

Dr. Cayan, chief of Weather Services Division of DOST-PAGASA, is also among the list of awardees. Some of her works include the following: "Study of Heavy Rainfall Events during the Southwest Monsoon Season in

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► *DOST officials and employees enjoy the zumba session during the Women's Month celebration in Hotel Jen.*

the Philippines”, “Seasonal March Patterns of the Summer Rainy Season in the Philippines”, “Abrupt Climate Shift in the Mature Rainy Season of the Philippines”, and “Tropical Cyclone Influence on Long-term Variability of Philippine Summer Monsoon Onset.”

The other two women awardees were vital in promoting science education in the country. They are Dr. Biyo, director of DOST-Science Education Institute, who is responsible for the implementation of the DOST human resource program for students and teachers and Dr. Habacon, the current executive director of DOST-Philippine Science High School System (PSHSS), who initiated the incorporation of STEM in the PSHSS curriculum to

produce graduates equipped with 21st century skills.

The two awardees who were not able to attend the ceremony were Dr. Zenaida P. Hadji Raof-Laidan, regional director of DOST-XII, who pushed for the establishment of the Philippine National Halal Science Center in Koronadal City, South Cotabato and Dr. Imelda A. Agdeppa, chief science research specialist from DOST-Food Nutrition and Research Institute, who spearheaded several studies on probiotics and fiber in milk, Vitamin D status of Filipino Adults, nutrient intakes and food sources of Filipino infants, toddlers, and young children.

In his speech, DOST Secretary Fortunato T. de la Peña shared the

department's commitment to create an environment where our Filipina scientists would be encouraged and inspired to look and develop innovative solutions to some of the country's pressing problems.

“For many years, we have been recognizing the efforts and valuable contributions of our Filipina scientists, particularly towards providing better livelihood and career opportunities for many Filipinos,” said Sec. de la Peña.

More than 300 officials and employees of DOST gathered in Hotel Jen to celebrate the crucial roles of women in the field of science, technology, and innovation. Other highlights of the event were dance and singing competitions, zumba, and giving out raffle prizes.

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Science prominent in 2018 TOYM

By Alan C. Taule, *DOST-STII*

Science is moving front and center in the country's march toward progress and modernization, if the winners of the 2018 TOYM or Ten Outstanding Young Men Philippines are any indication.

DOST Secretary Fortunato T. de la Peña, chair of the 2018 TOYM Board of Judges, made this observation on the occasion of the announcement of the awardees at Romulo Café in Makati City. He noted that of the 11

total winners, six are in the science fields or have backgrounds in those areas.

They are Cherrie D. Atilano in agribusiness, Department of Finance Undersecretary Karl Kendrick T. Chua in economic development, Rodne R. Galicia in environment and climate change, Erika Fille T. Legara in education innovation, and Dr. Katerina T. Leyritana and Dr. Mark Anthony S. Sandoval in the field of medical science.

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Distinguished personalities such as Dr. Nassef Manabilang Adiong for political and social services, Jamela Aisha M. Alindogan-Caudron for international journalism, Cauayan City Mayor Bernard Faustino M. Dy, Police Officer 2 Fatima I. Lanuza, and Antonio “Jaton” Zulueta, Jr. for community development complete the 2018 TOYM awardees.

“The 2018 awardees have all been carefully selected because of their leadership, motivation, achievements, and service despite their youth,” said Secretary de la Peña. “Yet it is equally important to note majority of them

are in fields that are largely science-based, facts-driven, and fueled by research.”

He added that this is a clear indication of the direction the Philippines is headed as far as driving change and progress is concerned.

The Outstanding Young Men and Women of the Philippines was launched in 1959 to honor the country’s men and women under the age of 40 who have made a difference in our society. Its past winners have since become champions and leaders especially in industry and public service.



Photo source: Cherrie D. Atilano in Agribusiness (Photo source: www.weforum.org)

YES! Our kids are excellent

By Lovely B. Aquino, *DOST-SEI*

PH keeps record-breaking streak in int'l tilts

► 2018 Youth Excellence in Science (YES) awardees in a group photo with DOST Secretary Fortunato T. de la Peña (center) and DOST officials during the awarding ceremony at the PICC. (Photo from DOST-SEI)



Some 730 young achievers in science and mathematics were honored during the annual Youth Excellence in Science (YES) Award held in February this year at the Philippine International Convention Center (PICC) in Pasay City.

The ceremony celebrated the victory of elementary and high school students in international science and mathematics competitions such as the International Mathematical Olympiad (IMO) and the Singapore International Mathematics Olympiad Challenge.

During the ceremony, said students from 120 schools in the National Capital Region were given the Secretary's Medal, which signifies the Department of Science and Technology's (DOST) high regard for excellence and competitiveness. Students from the other regions will also receive their medals in special ceremonies to be conducted by DOST regional offices.

During the awarding ceremony, DOST Secretary Fortunato T. de la Peña emphasized that the increasing trend is more than just an upsurge in numbers. "What we are more interested in is the quality that we elicit among our students, as well as the values we taught them during their training and actual competitions, and even after reaching their goals," he said.

On the part of the DOST-Science Education Institute (SEI), Director Josette T. Biyo thanked the awardees for showing the world the Philippine brand of excellence and hard work.

"We hope you can be our scholars and be with the people as you reach your dreams," said Dr. Biyo.

She also lauded parents, teachers, school officials, and national organizers of science and math competitions who supported the students.

YES awardee Emmanuel Osbert Cajayon of Emilio Aguinaldo College-Cavite expressed his gratitude to

DOST as he shared his experiences and reflections. The IMO bronze medalist reminded his fellow awardees to focus on their passion for their chosen fields and not just on achievements.

The YES Award is now on its 11th year, with each year showing a steady increase in the total number of awardees. From 70 student-medalists on its first year, 2018's total number of awardees was 1,469 (from 332 schools) – a 23 percent increase from the previous year's 1,195 and the highest number recorded in YES Award history.

Other DOST officials who were in the awarding ceremony include DOST Undersecretary for Scientific and Technical Services Dr. Carol M. Yorobe, DOST-SEI Deputy Director Albert G. Mariño, and DOST-NCR Regional Director Jose B. Patalinjug III.

The event was organized by the DOST-SEI, which spearheads the country's premier science scholarship program.

Science at the Heart of Development

By Charlotte F. Pizarra, *DOST-MIMAROPA*

Photo by *DOST-MIMAROPA*

DOST-MIMAROPA director feted as 2019 Outstanding Mover

Dr. Ma. Josefina P. Abilay, the first and incumbent regional director of the Department of Science and Technology (DOST)-MIMAROPA, was named as one of the Ten Outstanding Movers of the Philippines (TOMP) for leadership and public service.

Department of Environment and Natural Resources Secretary Roy A. Cimatu conferred the award on behalf of President Rodrigo Duterte on 28 February 2019 at the Kalayaan Hall, Malacañang Palace.

Dr. Abilay was cited for her notable contributions to the socio-economic development of the region, particularly in the space of poverty alleviation and disaster risk reduction and management and climate change adaptation.

In her acceptance speech, she attributed the award to her “equally passionate” DOST-MIMAROPA team and stressed the role and significance of harnessing science and technology to sustainable development.

“In my many years of service, I always instill in the community that the battle against poverty can be won with the help of science, technology, and innovation—that we must put science at the heart of development,” said Dr. Abilay.

Under her leadership, DOST-MIMAROPA was able to assist more than 400 firms which has provided employment to more than 19,400 individuals in the region since 2008.

In addition to local firms, DOST-MIMAROPA, through the guidance of Dr. Abilay, has been nurturing community-based enterprises



DENR Secretary Roy A. Cimatu (left) is with DOST-MIMAROPA Regional Director Dr. Ma. Josefina P. Abilay (right) during the 8th Ten Outstanding Movers of the Philippines Awarding Ceremony.

EXCELLENCE IN S&T

through various value-adding science and technology interventions and skills development trainings.

Also among the several reasons that helped her get the prestigious award is her hands-on approach in transforming the small community in Buenavista, Marinduque that suffered from unstable power supply.

Putting a premium on disaster management response strategy, she spearheaded the installation of Solar Energy System (SES) for the 15 families from the remotest part of the said community and for a public elementary school in Brgy. Yook in Marinduque. Later on, the school

managed to serve as the evacuation center during the onslaught of Typhoon Nina in 2016 as it was already equipped with lighting and ventilation for the afflicted residents.

Recognizing the efficacy of SES, the Department of Health-MIMAROPA partnered with DOST-MIMAROPA to provide the facility to the town's rural health unit and replicate the project in the entire region which led her to receive the 2017 Benita & Catalino Yap Foundation Innovation Award.

Previously, she was also awarded the 2015, 2017, and 2018 Kalasag Award for her exemplary contribution in building community resilience.

Annually conferred by the Students' Actions Vital to the Environment and Mother Earth (SAVE ME) Movement, TOMP seeks to inspire the prime movers from the different sectors of the society to proactively engage in the protection and preservation of the environment on personal and professional levels.

The award recognizes the selfless and exemplary contribution of Philippine citizens in the pursuit of making the world a safe and meaningful place to live in.

► *The 2019 Ten Outstanding Movers of the Philippines: (L-R:) Dr. Josefina P. Abilay, Joey L. Ayala, Aileen S. Campos, Arsenio "Nick" J. Lizaso, Engr. Juanito A. Simon, Engr. Omar Fajardo, representative to Maria Jessica A. Soho, Maria Christina Pascual, Dr. Edgardo R. Tulin, and Dr. Mona Liza Solano.*





► In photo: PACC Chair Dante Jimenez congratulates DOST Sec. Fortunato T. de la Peña. Photo courtesy of John Raña.

Science helps prevent corruption

By Framelia V. Anonas, *DOST-STII*

Science recently took another facet as a corruption prevention tool when the Presidential Anti-Corruption Commission (PACC) awarded the Department of Science and Technology a silver award during the PACC's first anniversary on 6 March 2019.

The award was received by both the DOST and Department of Budget and Management (DBM) for their collaborative venture called Project DIME which made the government's transparency and accountability efforts more efficient.

Also known as Digital Imaging for Monitoring and Evaluation, Project DIME enabled the government to efficiently monitor the status,

financing, and implementation of big-ticket projects using existing technologies such as satellites, drones, LiDAR, and geotagging software.

Said technologies facilitated the monitoring of projects especially those in far-flung areas where physical inspection would be difficult or complicated.

Currently, Project DIME monitors 12 high-value projects, including the Health Facilities Enhancement Program of the Department of Health, the National Greening Program of the Department of Environment and Natural Resources, and the National/Communal Irrigation Systems of the National Irrigation Authority, among others.

Data from the Project enables the DBM to evaluate project status and make recommendations whether to continue or discontinue project funding or take other actions to improve the project.

The distinction was among the one-year-old commission's efforts in recognizing and awarding government agencies for their programs and activities that fight graft and corruption in the bureaucracy.

Other awardees were the Philippine Securities and Exchange Commission and the Anti-Money Laundering Council (both Bronze Award). The Gold Award went to the Philippine National Police Firearms and Explosives Office-FEO.

National Scientist Clare R. Baltazar: Entomologist par excellence

By Niña Erika V. Barias, DOST-NAST



National Scientist Clare R. Baltazar
(Photo from DOST SPHERES)

A BRILLIANT teacher, a committed and productive research scientist, a *primus inter pares*, and an extraordinary administrator, Dr. Clare R. Baltazar was the first woman entomologist from the Philippines. She is also known as an outstanding systematic entomologist who has worked on bees, wasps, and ants.

Spanning more than 50 years of taxonomic career, she discovered and named 108 new species, eight genera, and one subgenus of parasitic wasps in the Philippines.

Dr. Baltazar was elected into the Department of Science and Technology-National Academy of Science and Technology in 1981 and in 2001. She was conferred the rank and title of National Scientist—the highest honor that could be given to a man or woman of science—for her pioneering work in the field of systematic entomology. Dr. Baltazar's work has inspired and guided other Filipino students and budding scientists to devote their scientific careers to study the diversity of Philippine insect life.

Discovering species

In the past, insects caught or reared from various hosts needed to be sent to the United States. National Museum or British Museum for identification. This process could take several months or even years to finish. Thanks to Dr. Baltazar, entomologists can now do their own

examination with the keys to genera that she has established.

In her paper "Genera of Parasitic Hymenoptera in the Philippines", she keyed out 125 genera of Braconidae (family of parasitoid wasps), 62 of which are new records for the Philippines. In the parasitoid wasp family Ichneumonidae, 215 genera and 24 subgenera are known to occur here. Out of these, 120 genera and four subgenera were reported for the first time.

Dr. Baltazar's "Catalogue on Philippine Hymenoptera" summarized data and listed 2,141 known species of Hymenoptera (large order of insects) in the Philippines from 1758 to 1963. This is useful not only for biodiversity researchers but also to biological control workers and economic entomologists as well.

Recognizing the need for a local book on Philippine insects, she co-authored the textbook "Philippine Insects: An Introduction" with Dr. Nelia P. Salazar in 1979. This was translated to Filipino language in 2001 and is being used nationwide in all state universities teaching general entomology.

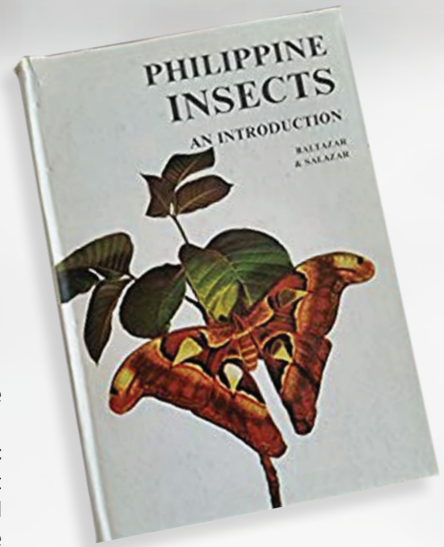
With the global interest in biodiversity and conservation, she wrote "Inventory of Philippine Insects" in two volumes and published these in 1990 and 1991. It was the first attempt by a Filipino to collate taxonomic information from widely scattered publications and in different languages.

Wasps for pest control

Dr. Baltazar found that wasps can be used to control wood pests. In the 1960s, she led a team in the study and control of the Florida red scale (reddish armored scale that is a major pest in Florida) on coconuts by releasing tiny wasps of the *Aphytis* species in scale-infested areas of Cebu for five years without importing expensive and environmentally damaging pesticides. This successfully established the wasp-parasite which controlled the Florida red scale.

In another success in the biological control of widespread pest, Dr. Baltazar used a similar strategy to control ipil ipil psyllid (plant pests) in 1986. She used local enemies and refrained from chemical sprays to control the psyllid, which by 1993 was no longer a pest in the Philippines.

Her applied studies leading to the successful biological control of insect pests of agricultural crops had been beneficial not only to the farming communities but also to the government.



Life of an expert

Dr. Baltazar was born on 01 November 1927 in San Fernando, La Union. She graduated from Los Baños Elementary School in 1939, and from University of the Philippines (UP) Rural High School in 1943.

She has consistently maintained outstandingly high standards of achievement throughout her academic life. She graduated summa cum laude with a bachelor's degree in agriculture from the UP Los Baños-College of Agriculture in 1947. She received her master's degree from the University of Wisconsin in 1950 and a doctorate from the same university and the North Carolina State University seven years later. She also did postdoctoral researches in the United States National Museum, the Smithsonian, six European institutions, and at the Kyushu University in Japan as a Guggenheim Fellow.

In 1952, Dr. Baltazar worked at the Bureau of Plant Industry in Manila where she spent 15 fruitful years of research. During her time as assistant director of the Agricultural Research Center of the National Institute of Science and Technology, she initiated the establishment of the Experimental Farm in Molino, Cavite and National Botanic Gardens in Siniloan, Laguna.

She then returned to her college Alma Mater in 1976. And as university professor in 1993 upon her retirement, she was appointed as university professor emeritus. Overall, she spent more than 40 years in government service.

Worthy of honor

Dr. Baltazar has been awarded with various important recognitions including the Jose Rizal Pro Patria Award and the National Research Council of the Philippines' Achievement Award for the Biological Sciences in 1980.

The benefits of her research contribution have gone beyond the boundaries of the Philippines and are now enjoyed by agriculturists and biologists all over the world. It has become an essential reference for entomologists, biologists, and biodiversity conservation workers worldwide. This is her legacy to our country and for the generations to come.

National Scientist Ricardo M. Lantican: A pioneer in PH agricultural dev't

By Niña Erika V. Barias, DOST-NAST



National Scientist Ricardo M. Lantican (Photo from DOST SPHERES)

THERE WERE many individuals who have contributed greatly to the nation's agricultural development. However, only a few have distinguished themselves to be ranked among the leading agricultural scientists of the country. One of them is Dr. Ricardo M. Lantican whose accomplishments typify the invaluable contributions of a scientist to national, as well as international, development.

Dr. Lantican was recognized for his research on cytoplasmic inheritance of hypersensitivity to a disease in maize, a discovery that created awareness among biologists on the importance of genetic diversity as a weapon against environmental adversities.

Contribution to plant science

As an output of his many research works, Dr. Lantican has written numerous technical articles on plant breeding and genetics in various national and international journals and books. Aside from these, he authored and published a textbook on crop science in 2001 which has become a text reference in crop production courses being taught in a number of agricultural colleges in the Philippines.

Dr. Lantican's major contribution to world science was when he and his group at the University of the Philippines Los Baños (UPLB) first demonstrated in 1961 a case of cytoplasmic or maternal inheritance of hypersensitivity

of maize plants to the Southern leaf blight disease. This finding was unknown elsewhere and therefore, a world's scientific first.

This biological phenomenon suddenly expressed itself in a devastating way when the leaf blight disease struck in epidemic proportion in the United States in 1970, causing a \$ 2 billion loss to the corn industry. At that time, almost all the US hybrids carried the same cytoplasmic factor (for male sterility) mentioned in the Philippine report. As a report of the US Academy of Science acknowledged later, the forewarning was long overlooked by US scientists.

Dr. Lantican and his research team in UPLB also worked on the development of a new plant structure in mungbean, making the crops adaptable to mechanized harvesting and combined with resistance to major diseases, the new varieties that evolved produced very high yields.

These new mungbean varieties became a popular choice among farmers in the Philippines, and other Asian countries.

Dr. Lantican's group has also developed tropical varieties of soybeans which can now be grown profitably in the Philippines.

The scientist administrator

Because of his expertise, Dr. Lantican became involved in science administration at UPLB. He was appointed chairperson of the Department of Agronomy in 1974 to 1980. In 1979, he became the director of the Institute of Plant Breeding. He was also appointed as director of research of the UP College of Agriculture in 1970-1973 and in 1984 to 1987.

From 1988 to 1992, he worked as undersecretary for Research and Development (R&D) at the Department of Science and Technology (DOST).

Dr. Lantican was also involved in institutional development. He was appointed as a member of a national panel whose work led to the establishment of the DOST-Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development.

In March 1985, he chaired an interagency committee whose efforts formed the basis for the creation of the Philippine Rice Research Institute or PhilRice. As undersecretary for R&D at the DOST, he was



instrumental in the creation of the National Committee on Biosafety of the Philippines and was appointed as its first chairperson.

Awards as a scientist

Dr. Lantican has received prestigious international, national, and institutional awards. He is a Fellow member of the Third World Academy of Sciences based in Trieste, Italy; an Academician member at the National Academy of Science and Technology of the Philippines; and first Awardee of the International Business Machine Award on Science and Technology in 1983.

He was also a recipient of the Ten Outstanding Young Men of the Philippines award in 1969; the Pro Patria Presidential Award from the Republic of the Philippines; the DOST-National Research Council of the Philippines (NRCP) Achievement Award; the Most Distinguished Alumnus Award, UPLB in 1991; and the Honorary Fellow Award from the Gamma Sigma Delta Society in 2006.

The rightful recognition

On 5 December 2005, in one of the grand ballrooms of Malacañang Palace, the President of the Republic of the Philippines, Her Excellency Gloria Macapagal Arroyo, bestowed upon Dr. Lantican the rank and title of National Scientist—the highest honor that could be given to a man or woman of science for exemplary and significant achievements and contributions to science and technology.

In all of his accomplishments, one cannot help but remember the famous line that says: "A journey of a thousand miles begins with a single step." Dr. Lantican has taken more than a million steps in order to reach his dream — to help Filipino farmers uplift their lives through plant breeding

Sahagun appointed as Asec for Finance

By Framelia V. Anonas, *DOST-STII*

MS. MARIDON O. Sahagun takes her oath as new Asst. Secretary for Finance following her appointment on 15 February 2019. She concurrently serves as acting director for Planning and Evaluation Service (PES). A true blue “Iskolar ng Bayan”, Ms. Sahagun is a graduate of the Philippine Science High School, obtained her BS in Biology degree from UP Diliman, and earned her Master of Technology Management at the UP- Technology Management Center. She was previously appointed as director of PES (15 November 2016). She is also a recipient of the Asian Productivity Organization grant for a study mission to UK on development of knowledge-based business.



Briones is the new ITDI Director

Text and photos by Reginald Roy U. de la Cruz, *DOST-ITDI*

AFTER SERVING for more than a year as the officer-in-charge of the Institute's Office of the Director, Dr. Annabelle V. Briones officially assumes the directorship of the Department of Science and Technology-Industrial Technology Development Institute (DOST-ITDI).

DOST Secretary Fortunato T. dela Peña swore her in on 21 February 2019 at the conference room of the Advanced Device and Materials Testing Laboratory before the DOST Executive Committee and invited DOST-ITDI staff.

Dr. Briones succeeded Dr. Maria Patricia V. Azanza whose term as director ended on 31 December 2017. Dr. Briones was also serving as DOST-ITDI's Deputy Director for Research and Development when she became DOST-ITDI's OIC on 01 January 2018.

She indeed rose from the ranks for the past 35 years, starting out as a Science Research Specialist I (SRS I) at the then National Institute of Science and Technology (NIST) and eventually promoted to Supervising Science Research Specialist and then as Chief Science Research Specialist of the Chemicals and Energy Division.

An expert in both chemistry and engineering, her decades' worth of researches in carrageenan and other pharmaceuticals as well as the development of the mosquito ovi-larvicidal trap has won her and DOST-ITDI



DOST Secretary Fortunato T. de la Peña swears in new ITDI Director Annabelle V. Briones.

various awards within the scientific community. Such recognitions earned her the title Scientist I in 2018.

Hailing from Balingasag, Misamis Oriental, she earned her undergraduate degree in chemistry from Xavier University-Ateneo de Cagayan in Cagayan de Oro City in 1981. Upon graduation, she taught for a year at the Don Mariano Marcos Memorial University. After her one-year teaching stint, she got in at DOST in 1982 as an on-the-job trainee at

the NIST and as contractual employee in 1983 at the then National Science and Technology Authority before getting a permanent post in 1984 as SRS I. She also earned her master's degree in chemistry from the University of Santo Tomas and her doctorate in engineering from Keio University in Japan.

An outstanding researcher. A brilliant scientist. A strict yet gentle leader. A fabulous and loving wife and mother of three. And now, DOST-ITDI Director.

LiDAR expert sworn in as Innovation Council head

By Rodolfo P. de Guzman, *DOST-STII*

Photo by Gerardo G. Palad, *DOST-STII*



THE INNOVATION Council has a new chief.

Dr. Enrico C. Paringit was recently sworn into office by Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña as the new head of the DOST- Philippine Council for Industry, Energy, and Emerging Technology Research and Development.

Prior to his appointment, Dr. Paringit served as project leader of Phil-LiDAR, a DOST- funded program that used light detection and ranging technology to produce topographical maps of the different major river basins in the country as information tool for disaster risk reduction and management.

Dr. Paringit's work on the LiDAR program earned him and his team the World Geospatial Excellence Award in Geneva, Switzerland and the Asia Geospatial Award both in 2014. Dr. Paringit was one of the awardees of the Outstanding Young Scientist for 2015 given by the National Academy of Science and Technology, Philippines, in the field of geodetic engineering research.

The new Innovation Council chief obtained his undergraduate degree on geodetic engineering from the University of the Philippines in Diliman and placed second in the Professional Geodetic Engineers examination in 1997. He finished his graduate studies in remote sensing in the same university in 1999, and his post-graduate degree at the Tokyo Institute of Technology in 2003.

Dr. Carlos named new deputy of DOST-PCAARRD

Text by Rodolfo P. de Guzman, *DOST-STII*

Photo by Gerardo G. Palad, *DOST-STII*



DR. MELVIN B. Carlos was recently appointed as the new Deputy Executive Director for Administration, Resource Management, and Support Services Cluster of the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD).

With his new appointment, Dr. Carlos is tasked to lead in the coordination of planning, programming, monitoring, and evaluation of science and technology support activities such as general administration, institution development, resource management, strategic communication, management information system, and policy at the DOST-PCAARRD.

Dr. Carlos brings with him his vast experience from regional and international research and development centers, having worked at the Southeast Asian Regional Center for Graduate Study and Research in Agriculture, Winrock International, World Fish Center, International Fund for Agricultural Development, International Rice Research Institute, Asian Development Bank, and International Development Research Center.

20 Filipina Scientists who make us proud

Pinay (our nickname for “Filipina”) scientists have been making waves in their respective fields. In this issue of the S&T Post, we present 20 of the many Pinay scientists who truly make us proud for their achievements and contributions to society. They are arranged here in random, and the list is undeniably limited due to space. The next batch of equally excellent Pinay scientists will be published too in the upcoming issues of the Post.



1

1. MA. REGINA HECHANOVA-ALAMPAY

An industrial/organizational psychologist, Dr. Hechanova studies about how leadership affects innovation culture. She also tries to understand the dynamics and meaning of work in the Philippine setting. One of her papers uncovered that “family” is a novel work motivation of Filipinos in addition to job needs (fulfillment, pay, etc.), organization belongingness, and career. Her recently published works include “Understanding and Managing the Filipino Worker and Organization (2nd Ed)” and “Rebirth and Reinvention: Transforming Philippine Organizations.”

She was recently awarded as the 2018 Outstanding Psychologist by the Professional Regulation Commission. Her recognition as one of The Outstanding Women in the Nation’s Service in 2010 by the TOWNS Foundation and Outstanding Young Scientists in 2005 by the Department of Science and Technology-National Academy of Science and Technology (DOST-NAST) further her list of accomplishments.

With a PhD in psychology from the Central Michigan University, she is currently a professor in the Department of Psychology at the Ateneo de Manila University. She also leads the Task Force on Drug Recovery Support of the Psychological Association of the Philippines.



2

2. LUZ OLIVEROS BELARDO

She dedicated half a century of her career in studying the chemistry of natural products and essential oils from Philippine plants. Her efforts led to discovery of at least 33 essential oils that can be used as herbal medicine, scents, and flavoring. She showed that coconut oil can be used for soap-making while papaya enzymes have medical benefits.

Dr. Belardo earned her PhD in pharmaceutical chemistry from the University of Connecticut in 1957. She also held various positions in the Philippine Women’s University, such as director of the Natural Sciences Research Center and dean of the College of Pharmacy.

She received numerous local and international awards during her five-decade long career. Her passion in phytochemical research earned her some 32 awards, such as the Luinsford-Richardson Award in Pharmacy, USA in 1956; Philippine Pharmaceutical Association Outstanding Pharmacist Award in 1963; Federacion Internacional de Abogadas Award in 1979; Waseda University Plaque of Recognition, Japan in 1981; Professional Regulation Commission Award in Pharmacy in 1983; National Research Council of the Philippines Award in Phytochemistry in 1985; and El Consejo Mundial Award, Mexico in 1988.

She was conferred as National Scientist by the DOST-NAST



3

3. MARIA GENALEEN Q. DIAZ

She was recognized by the DOST-NAST in 2006 as Outstanding Young Scientist for her outstanding contributions to the genetic analysis of important Philippine crops like coconut, saba banana, and abaca. These would help breeders in improving their crops.

Aside from her published journal articles, she and her co-authors have also written eight laboratory manuals in genetics and cytogenetics which became helpful to many students from the past years.

She is currently a professor in the Institute of Biological Sciences of the University of the Philippines Los Baños. She brings her expertise in molecular genetics in the agriculture, livestock and fisheries program of the UP Philippine Genome Center.



4

4. MARIE CARMELA M. LAPITAN

Dr. Marie Carmela M. Lapitan pioneered a field of urology that gives care to incontinent patients or those who cannot control their urine or feces. She inspired young doctors to take this specialty so that other patients with such needs could also avail of high quality care. This led to her recognition as Outstanding Young Scientist (2004) from the DOST-NAST.

She is currently affiliated with the Division of Urology of the University of the Philippines Manila–Philippine General Hospital where she practices her expertise in urology, medical informatics, surgical education, and geriatrics (science that deals with health and care of old people).

WHO'S WHO?



5. MA. CORAZON A. DE UNGRIA

Dr. de Ungria advocates the use of forensic DNA technology to improve the criminal justice system in the Philippines. She was involved in handling biological samples related to investigating sexual assaults and identifying human remains from suspected victims of torture and extrajudicial kills. She brought her expertise in the creation of the Rule on DNA Evidence that was promulgated by the Supreme Court in 2007 and later on guided local and national courts.

She currently leads the DNA Analysis Laboratory of the University of the Philippines (UP) Diliman Natural Sciences Research Institute, and the Forensics and Ethnicity Program of the UP Philippine Genome Center. Her leadership capacities help in understanding the genetic diversity of different Philippine population groups.

She earned her PhD in microbiology from The University of New South Wales in 1999. Her recognition as Outstanding Young Scientist (2003) from the DOST-NAST and Philippines Promising Star Awards 2016 by Intellectual Property & Science of Thomson Reuters were some of her career highlights.



6. CARMELITA F. DOMINGO

Dr. Carmelita F. Domingo is a practicing pediatrician who specializes in pediatric endocrinology. She is acknowledged as one of the prime movers of newborn screening in the Philippines.

She was recognized for her contribution to medical sciences, particularly for her medical researches on the early diagnosis of cretinism—a condition of severely stunted physical and mental growth due to untreated congenital deficiency of thyroid hormones. This research has helped save many children from a life of diminished intellectual capacity and limited option.

Dr. Domingo's researches on how high exposure to lead among school children can affect the children's mental and physical development became the basis of other researches on the correlation of leaded gasoline to the levels of lead in blood. These researches eventually became the basis of new policies on sealing milk cans.

In 1981, Dr. Domingo received the Philippine Pediatrics Community Research Award.



7. CARMEN C. VELASQUEZ

Famous for her discoveries of new genus of trematodes (any parasitic flatworm of the class Trematoda) from Philippine species of birds, fishes, and mammals, Dr. Carmen C. Velasquez was conferred the National Scientist Award in 1983.

She holds the distinction of being the first PhD graduate of Parasitology at UP, where she earned the degree in 1957. Her published book, "Digeneic Trematodes of Philippine Fishes" is a first in Southeast Asia and provides a comprehensive reference to fish parasitology and aquaculture management in the region.

Her research works resulted in the publication of 476 basic research and 45 scientific papers, most of which were published and cited in international journals.

She is an academican of the DOST-NAST.



8. CARMENCITA DAVID PADILLA

Dr. Carmencita D. Padilla is a pioneer in genetics in the Philippines. She is notably recognized for her contributions to the establishment of newborn screening for genetic disorders in the Philippines. Dr. Padilla helped craft the newborn screening bill and tirelessly pushed for its enactment into law, which is now known as Republic Act 9288 or the Newborn Screening Act of 2004.

Her efforts in pushing for the newborn screening law has also led to the establishment of the national newborn screening services in the country which is currently available in more than 6,000 health facilities in the Philippines.

Her numerous awards and recognitions are proof of her outstanding contributions to medicine, especially in the field of genetics. She set up the genetic services at the University of the Philippines (UP) in Manila in 1990 and the Philippine Genome Center in 2009.

Dr. Padilla, who is also an academican of the DOST-NAST, is a professor of Pediatrics at the UP College of Medicine and currently Chancellor of UP Manila.

WHO'S WHO?



9. CARMEN LL. INTENGAN

Dr. Carmen LL. Intengan's most outstanding achievements have contributed to the advancement of nutrition and nutrition research in the country.

In 1957, she received a Presidential Award for her great contribution in basic nutrition research, while in 1968, she received the Presidential Award for Merit for Science.

Dr. Intengan served as director of the DOST-Food and Nutrition Research Institute from 1974 to 1980. She is also an academician of the DOST-NAST.



10. CLARE R. BALTAZAR

Her pioneering research on Philippine insects earned her the distinction of being declared as a National Scientist in 2001 in the field of systematic entomology.

Dr. Clare R. Baltazar's discovery of the Philippine-endemic Hymenoptera species has contributed to biological management in the country and insect control applications. Hymenoptera is a large order of insects that include the ant, bee, wasp, and sawflies.

She was conferred as an Academician of the DOST-NAST.



11. ALMA O. CANAMA

Alma O. Canama is recognized for her significant contributions to the field of crop biotechnology. She concentrates on molecular mapping, map-based gene discovery, varietal fingerprinting, line purity and hybridity testing, molecular confirmation and characterization of transgenic crops, diversity analysis, and marker-assisted selection on the breeding programs of several Philippine crops. These crops include corn, mungbean, banana, sugarcane, tomato, papaya, and eggplant.

Her works on the molecular mapping of genes resistant to bacterial stalk as root of corn, downy mildew of corn, and *Cercospora* leaf spot of mungbean contributed to the understanding of the genetics of plant resistance and to the design of efficient and effective strategies for breeding for resistance to these diseases.

Canama's fields of expertise include plant genetics, plant pathology, and plant genetic resources. She is a University Researcher II at the Institute of Plant Breeding, College of Agriculture and Food Science, UP Los Baños.

She was awarded as one of the Outstanding Young Scientists in 2013.



12. DR. BELINDA V. DE CASTRO

Dr. Belinda V. de Castro is recognized for her important contributions in the field of mathematics. She holds a Bachelor of Science degree major in Actuarial Mathematics (1984) from the Royal and Pontifical University of Santo Tomas. She has a Master of Science degree major in Mathematics Education (2000 *summa cum laude*) and Doctoral degree in Educational Management (2011 *magna cum laude*).

To date, she has a total of 21 international and 3 local publications in the fields of shadow education, mathematics education, and educational management.

In her capacity as a researcher, she was given several awards: 2014 National Research Council of the Philippines Achievement Awardee, Dangal ng UST Best Published Work Awardee in 2011 and 2015 (Social Science and Education Category), Silver Series Awardee in 2002, 2004, 2008, and 2010; Gold Series Awardee in 2012 and International Publication Awardee in 2004, 2008, 2010, and 2012.

WHO'S WHO?



13. DR. AUXENCIA A. LIMJAP

Dr. Auxencia A. Limjap earned her Bachelor of Science degree in Education from the University of Santo Tomas in 1974 and her Master of Science degree in Mathematics from the Ateneo de Manila University in 1982. She further pursued her studies and earned her Doctor of Philosophy degree from De La Salle University in 1996. Since 1990, she has been serving as a professor at the De La Salle University-Taft in Manila.

Dr. Limjap is recognized for her invaluable contributions to the academic community as an innovative educator and a strong advocate of the Lasallian transformative learning framework that was considered to have changed the landscape of mathematics education in the country. Her vast experience in conducting studies and researches led to the development of various modules and programs for various schools at different levels and greatly contributed to the enrichment of a research culture among the youth.

Her professional affiliations include the following: Board Member of the International Society Active Learning, South Manila Inter-Institutional Committee on Instruction, Philippine Council Mathematics Teacher Educators (president 2001 to 2004, board member 2006 to 2010), and Associate Member of the DOST-NAST. She was one of the recipients of the 2013 NRCP Achievement Award.



14. DR. ASUNCION K. RAYMUNDO

Dr. Asuncion K. Raymundo is a pioneer in microbial genetics and the use of biotechnology in agriculture in the Philippines. She has implemented numerous research projects, including some funded by the Rockefeller Foundation, UNIDO, and the Australian Centre for International Agriculture. She has published over a hundred technical articles in refereed journals and proceedings, both local and international, in her fields of expertise that include microbial genetics, antibiotics, bacterial taxonomy, industrial microbiology, biotechnology, and microbiology. To her credit, she developed the field of microbial genetics locally.

As a professor, Dr. Raymundo instituted and taught several courses in microbiology and plant pathology, had written a number of laboratory manuals in various courses, and supervised over a hundred undergraduate and post-graduate students. She is active in extension work, having served as organizer, coordinator or lecturer in various training courses, workshops, and seminars.

In recognition of her work in microbiology, microbial genetics, and biotechnology, Dr. Raymundo received numerous awards, including the NAST Distinguished Award in Biology, UPLB Outstanding Teacher and also as Researcher, PCARRD Pantas Outstanding Researcher Award, Crop Science of the Philippine Achievement Award in Research, Outstanding Microbiologist Award given by the Philippine Society for Microbiology, Republica Award given by the Commission on Higher Education, and the 2007 UP Outstanding Professional Award in Natural Sciences-Biology (Microbiology).

In 2002, she was conferred the status of Academician by the DOST-NAST.



15. DR. AGNES C. ROLA

Dr. Agnes C. Rola is recognized for her body of works in integrative thinking devoted to understanding the link among agriculture, the environment, and sustainable community development. Her most important contribution to the field of agricultural economics and policy is the development of a framework for estimating the externalities surrounding agricultural production.

Her academic work includes the study of the impacts of pesticide use on farmers' health, the results of which were instrumental in implementing the ban on most toxic pesticides and a shift towards Integrated Pest Management. Her long years of field research in the uplands plus watershed-level analysis involved the investigation of the sources and consequences of tensions in economic growth, commercialization of agriculture, and the evolution of institutions and policies in the management of natural resources in the uplands.

Her major fields of expertise include agriculture and forestry, social science, agricultural economics, sustainability science, agricultural policy analysis, and data analysis.

Dr. Rola is currently a professor at the Institute for Governance and Rural Development of the University of the Philippines Los Baños.



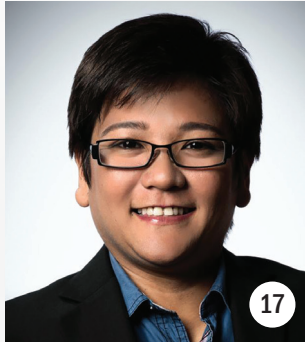
16. DR. FILOMENA FORTICH CAMPOS

A DOST-NAST Academician, Dr. Filomena Fortich Campos is recognized for her contributions to cotton, cotton production, and sunflower research in the Philippines.

Her scientific studies led to the rapid development of a package of production technologies that benefitted the entire cotton industry in the country. She was also deeply involved in the research of industrial sunflower production as potential sources of edible oils and livestock feed. Her studies also found applications on insect pests, insect control, predation studies, and weed control.

Dr. Campos' awards include: The Ayala Award for Outstanding Scientist, Botany in 1974; Presidential Award for Public Service in 1976; Woman of the World Award in 1983; and the prestigious Philippine Association for the Advancement of Science and Technology Gregorio Zara Award for Scientists in 1973.

WHO'S WHO?



17. DR. GAYVELLINE C. CALACAL

One of the finalists for Best Research Award for Young Scientist in 2009, Dr. Gayvelline C. Calacal specializes in the use of DNA technology for forensic applications. She is one of the senior DNA scientists at the University of the Philippines-Natural Sciences Research Institute-DNA Analysis Laboratory which is mandated to establish the scientific framework of forensic DNA typing in the country. The laboratory's goal is to integrate DNA evidence as a standard investigative procedure in the justice system.

As an expert in forensic DNA analysis, she has been involved in research studies that validated analytical procedures for handling different types of biological materials for forensic application; developed a system for the collection, handling and analysis of evidence, particularly in sexual assault cases; and generated and expanded the reference genetic databases of the Philippine population. All of these have been proven to very useful in the statistical analysis of matching DNA sample.

Her active involvement in the promotion and dissemination of DNA typing technology in the country through lectures and training programs attest to her deep commitment to this field, generating public trust in forensic DNA typing technology.



18. DR. FE V. DEL MUNDO

Dr. Fe V. del Mundo dedicated her life to the cause of pediatrics in the country. The first Filipina to become a National Scientist in 1980 and a DOST-NAST Academician, Dr. del Mundo was the founder of the first pediatric hospital in the Philippines—the Children's Medical Center, a 100-bed hospital located in Quezon City and was inaugurated in 1957. The hospital was expanded in 1966 through the establishment of an Institute of Maternal and Child Health, the first institution of its kind in Asia.

Del Mundo was active in the field of public health, with special concerns towards rural communities. She organized rural extension teams to advise mothers on breastfeeding and child care. She also promoted the idea of linking hospitals to the community through the public immersion of physicians and other medical personnel. This resulted in greater coordination among health workers and the public for common health programs such as immunization and nutrition.

She also called for the greater integration of midwives into the medical community, considering their more visible presence within rural communities.

Del Mundo was also known for having devised an incubator made of bamboo, designed for use in rural communities without electrical power. Her untiring devotion to child care earned her a number of honors: Elizabeth Blackwell Award for Outstanding Service to Mankind in 1966; Ramon Magsaysay Award for Public Service by a Private Citizen in 1977; Rotary International Science Award in 1960; and 15th International Congress of Pediatrics Award as Most Outstanding Pediatrician and Humanitarian in 1977. On April 22, 2010, President Gloria Macapagal-Arroyo awarded del Mundo the Order of Lakandula with the rank of Bayani at the Malacañan Palace. The following year (2011), she was posthumously conferred the Grand Collar of the Order of the Golden Heart Award by President Benigno Aquino III.

She was born on 27 November 1911 and died on 6 August 2011 at age 99.



19. DR. GEMMA TERESA T. NARISMA

Dr. Gemma Teresa Tamayo Narisma is recognized for her outstanding researches on the influence of land cover on climate and regional climate modeling. These are important in understanding the complex forces that drive anthropogenic human-induced climate change and in assessing the impacts of global climate change. This is vital especially for a climate-sensitive agricultural archipelago like the Philippines where impacts of global warming need to be known and anticipated.

Her research outputs have been published in international journals and contributed significantly to public policy formulation and implementation on adaptation or disaster risk reduction measures.

For her exemplary contributions to science, she was awarded the NAST Outstanding Young Scientist in Atmospheric Science in 2012 and the TOWNS Foundation Ten Outstanding Women in the Nation's Service in 2013.

Dr. Narisma currently serves as the Executive Director for Research and head of the Regional Climate Systems Program of the Manila Observatory. At the same time, she is also an Associate Professor at the Department of Physics of the School of Science and Engineering in Ateneo de Manila University.



20. DR. GELIA T. CASTILLO

Dr. Gelia T. Castillo is recognized for her outstanding contributions to agricultural social science resulting in a body of knowledge about the Philippine rural society. Her contributions enabled the Filipino to understand better the social conditions and dynamics of agricultural and rural development. She was already studying about women even before gender issues became a major theme in development research. In all her efforts, Dr. Castillo always ensured that the results would be relevant and responsive to the needs of the rural population.

Among of the many awards of Dr. Castillo were: Jose Rizal Pro Patria from the Philippine Government in 1966; Ten Outstanding Women in the Philippines from the Federacion Internacional de Damas Abogadas in 1968; honorary doctorates-Doctor of Science from the Agricultural University (Wageningen, Netherlands), Ateneo de Manila University, and De La Salle University; National Social Scientist from the Philippine Social Science Research Council in 1993; and Research Award from Ford Foundation.

Dr. Gelia T. Castillo was elected to the DOST-NAST PHL as academician in 1983. She was conferred the highest honor and rank of National Scientist in 1999.

Dr. Castillo, the country's distinguished rural sociologist, joined our Creator on August 5, 2017 at age 89.

DOST-Caraga, DepEd Butuan to install STARBOOKS in schools

By Dionard N. Mendoza, *DOST-Caraga*

Photos from DOST-Caraga



▼ *A teacher from Butuan City raises his concern on STARBOOKS installation in their school.*

Fifteen districts of the Department of Education's (DepEd) Butuan City Division will now be able to provide access to science and technology information and digital learning materials to students and teachers, principals, school IT personnel, and teacher librarians.

Represented by 130 participants from 40 schools, the Butuan City Division participated in the orientation of the STARBOOKS (Science and Technology Academic and Research-Based Openly-Operated Kiosks). Said orientation was held by the Department of Science and Technology (DOST)-Caraga at DepEd Butuan City Division Office on 11 January 2019.

STARBOOKS, a technology developed by the science department's Science and Technology Information Institute (DOST-STII), is a "library in a box" that contains thousands of digitized S&T resources in various formats, text, and video/audio. Aside from providing information, it aims to create interest among youngsters to enroll in S&T courses and encourage entrepreneurship and research.

Imie Concepcion C. Valdez, division librarian, said that school principals, IT personnel, and teacher librarians have specific roles in the implementation of the program.

"We invited specific people for we know they will directly affect the implementation. The principals will

give the 'go' signal, while the school IT personnel will handle the technical work, and teacher librarians will market the technology and monitor utilization of the materials," she said.

Reyjean R. Comaling, IT personnel of DOST Caraga-Technical Support Services, discussed about the features and functionality of the system to the participants. The installation of STARBOOKS software will be scheduled after consultation with qualified schools in Butuan City. Additional training on the maintenance of the system will also be provided to school IT personnel and librarians.

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Going beyond

Dr. Bebelyn C. Corvera, Curriculum Implementation division chief, expressed her support in expanding the scope of the program in Butuan City.

“STARBOOKS is suitable for the curious children today. It is only a matter of how we will start but if we take a step, there will be a positive effect on the student’s learning environment,” Dr. Corvera articulated in her speech.

The division chief believes that STARBOOKS, with its user-friendly interface, can be an effective tool for teachers and the curriculum for knowledge transfer. Dr. Corvera also encouraged teachers and school personnel to go beyond of what is expected from them.

“Let us always go beyond competencies. Let us not limit ourselves with memoranda and what is already there. Let’s explore, research and innovate more for our students with collaborative efforts with different agencies such as DOST-Caraga,” said Dr. Corvera.

Aside from going beyond competencies, Education Program Supervisor under Learning Resource Management and Development Section Dr. Donald D. Orbillos expressed the need to revive “dying libraries” in public schools since they are converted into classrooms due to lack of space and manpower.

“It’s a nationwide problem. We do not have full-time librarians and STARBOOKS can fulfill the lack of

personnel. Many of our materials are even obsolete that we need new platforms for research and instruction. This technology will serve as a supplement to existing learning resources,” told Dr. Orbillos in an interview.

Being the first division to avail of the program this year, Dr. Orbillos expects maximum use of STARBOOKS. The supervisor gave DOST-Caraga a thumbs-up for its effort in providing access to quality science and technology learning resources in the region.

Since 2014 when the S&T digital library in a box was launched in Caraga, there are now 200 libraries with STARBOOKS in the region.



► *Reyjean R. Comaling, IT personnel of the Technical Support Services at DOST-Caraga, discusses the features of STARBOOKS to participants.*



► Dr. Drandreb Earl Juanico explains to DOST Secretary Fortunato T. de la Peña the functions of the monitoring device that his team developed.

S&T Caravan showcases DOST-NCR assisted products, technology

Text and Photos by Enrico A. Belga, Jr., *DOST-STII*

Mushrooms, a soil monitoring device, urban gardening, cookies, shoes, wound dressing, steel fabrication, and native delicacies—these were just some of the featured products and technologies showcased during the 2019 Science and Technology (S&T) Roadshow.

Organized by the Department of Science and Technology-National Capital Region (DOST-NCR), the S&T caravan was held on 19 and 21 February 2019. DOST Secretary Fortunato T. de la Peña and DOST-NCR Regional Director Jose B. Patalinjug III hopped on to seven businesses and one university that benefited from DOST's programs that assist micro, small,

and medium enterprises or MSMEs to grow their businesses.

Tech applications in medicinal drug discovery

Through the DOST's Collaborative Research and Development to Leverage Philippine Economy (CRADLE) Program, a team of senior Computer Engineering students from the Technological Institute of the Philippines (TIP) in Manila developed a device that monitors the soil and environmental conditions of sambong plantations.

Data collected from the device's sensors are keyed into a software that calculates variables for analysis.

According to the researchers, this technology is crucial in the drug discovery



► Secretary Fortunato T. de la Peña and DOST-NCR Regional Director Jose B. Patalinjug III present the Certificate of Recognition to the team who developed the monitoring device.

process because the enhancement of medicinal extracts depends on how the plants are grown.

"We don't have to import medicines abroad if we can develop our own from local medicinal plants like sambong which is abundant in our country," said Dr. Drandreb Earl Juanico, research director of TIP Manila.

FEATURES

► *Secretary de la Peña and Director Patalinjug check the mound of soil used in mushroom production of the Mushroom Producers Cooperative in Nangka, Marikina City.*



Mushrooms beef up Marikina burgers

In the age of fastfood restaurants, practices like veganism are becoming a trend. Many people are now looking for healthier food options. And what can be a good substitute for that juicy beef hamburger minus the extra cholesterol? You might be surprised to find the mushroom as a healthier alternative to beef patties.

To improve their mushroom production and ride the tide of healthy eating, TJ Milky Mushroom Co. and the Mushroom Producers Cooperative in Nangka, Marikina City availed of technological intervention from the DOST-NCR through the Small Enterprise Technology Upgrading Program (SETUP).

After the SETUP assistance, the two businesses eventually managed to further improve the quality and efficiency of their processing and production of oyster and milky mushrooms which are being used in making mushroom patties for burgers. Who would have thought that mushrooms can beef up burgers?

Urban gardening in Marikina

The Twinville Homeowners Association, Inc. credits the DOST for the development of their Simple Nutrient Addition Program hydroponics urban garden into an agro-tourism farm.

Currently, the urban farm is a site to behold in the middle of a highly urbanized community. Trays filled with healthy-looking lettuce and pechay are neatly arranged under tents. There are bags of spices and culinary herbs like parsley, serpentine, turmeric, stevia, basil, chives, garlic, peppermint, spear mint, and insulin plant, among others. There is also a man-made river within the grounds.

“Prior to its development, this urban garden was a vacant lot of bushes, trees, and garbage. Even juvenile delinquents and criminals occupied this lot as their hideout before,” said one of the caretakers of the garden in Concepcion Uno, Marikina City.

Through the assistance of the DOST-Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development and DOST-NCR, the homeowners associations’ urban garden now sells its organically-grown and pesticide-free produce. The urban farm also provided jobs for some local residents.



► *A member of the Twinville Homeowners Association, Inc shows off the association’s urban garden.*

Iconic Marikina shoe brand gets DOST support

One of the enduring local shoe brands, Bristol Shoes in Marikina City, started out as a small family-run business and has been around since 1978. The firm's shoes are often mistaken as imported because of the shoes's high quality, but the products are proudly Philippine-made.

Before becoming a beneficiary of the DOST, the company's back part molding was manually done, thus taking a longer production time. Through technology upgrade and interventions acquired through the DOST-NCR, the company increased production capacity from 20,000 pairs to 30,000 pairs per year. The technology upgrade also reduced shoe rejects by 20 percent and provided additional job opportunities.



► *Sec de la Peña and Dir. Patalinjug with the owners of Bristol Shoes at the company's shoe factory in Marikina City.*

Cookie sticks: Award-winning biz supported by DOST

Aretei Foods Corporation, maker of Cookie Sticks, produces various kinds of breads, cakes, cookies, and brownies. It started as a sole proprietorship in 2007 and was later incorporated in 2013. The DOST has been instrumental in bringing out the company's potential to be a world-class cookie brand.

Through the SETUP, the business eventually managed to

further improve product quality and production capacity by 100 percent. The company also developed new variants such as Mango Cashew, Chocolate Raisin, Coco Sugar Oatmeal, and Calamansi Almond.

Aretei Foods's Cookie Sticks is one of the five nominees for the Innovation and Employment category at the ASEAN Business Awards held in Kuala Lumpur, Malaysia on 22 November 2018.



► *Aretei Foods Corporation's wide array of cookie sticks flavors, namely Mango Cashew, Chocolate Raisin, Coco Sugar Oatmeal, and Calamansi Almond.*

Cocopatch: Wound dressing made from coconut extracts

CocoPatch is the brand of the coconut-based cellulose wound dressing developed by Denver Chicano, a registered nurse who grew up exposed to his parents' *nata de coco* business when he was young.

Through the DOST SETUP, Chicano was able to develop the antimicrobial properties of the award-winning wound dressing which paved the way for him put up his own business.

Aside from technical assistance, Chicano shared that DOST has been instrumental in his research about CocoPatch as it was at the DOST library where he initially came to research on how he can create the said product.

The CocoPatch absorbs the contamination of the wound, hastens the healing process, and helps it heal on its natural course. It contains monolaurin, a substance from lauric acid found only in coconut oil and in human breast milk.

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“Most of the wound care products in the local market are made abroad. Specialized dressings cost around PhP 600-900, but you can buy Cocopatch for only PhP 140-300,” Chicano said.

Chicano added that the Philippines has rich coconut reserves, which is an advantage for the mass production of the CocoPatch product. He said that other countries have tried to create similar products but were not at par with the CocoPatch due to the quality of coconuts sourced locally.



► The CocoPatch wound patches are carefully sterilized, processed, and sealed inside the facility to ensure their quality.

Steel fabrication company succeeds through DOST assistance

The E.G. Energy Corporation, located in Lawang Bato, Valenzuela City, is another inspiring story about a company that started humble and small.

Edmundo Saludez, the company's Vice President/General Manager, initially started as a draftsman who dreamt of owning his own company someday. He started his own small business in 1994 and learned everything he can like fabrication of

motor control center and structures of capacitor bank.

When Saludez heard about the DOST's SETUP and how it can help his enterprise, he took his chance.

“Our price is lower compared with the foreign competition. We have also distributed to several cities like Cebu, Davao, and General Santos,” Saludez added.

With the technological assistance, they were able to trim the processing to 75 percent, improved shearing/cutting time, and reduced reworks by 50 percent.



► The Secretary and Dir. Patalinjug inspect one of the machines inside the facility of E.G. Energy Corporation.

The company specializes in metalworking, fabrication, specialty electrical installation, preventive maintenance, retrofitting, and power quality testing and analysis.

Quality *kakanin* made possible thru DOST assistance

The Original Dolor's Kakanin is a legendary brand in the local food industry. Serving delicacies since the 1930s, it is known for quality traditional *kakanin* (rice cake) like *sapin-sapin*, *kalamay*, *biko*, *puto*, and

pichi-pichi.

At the helm of Dolor's Kakanin is Elenita “Ellen” Jacinto, third-generation owner and niece of the founder Dolores “Aling Dolor” Santos. As early as 11PM, Jacinto starts her work by preparing the ingredients for cooking. She personally inspects ingredients like glutinous rice, cassava, and coconuts to ensure the quality of their products.

“I make sure that all ingredients are top quality. It is a habit I learned from my aunt Dolor. She also taught me how to determine by heart the right measurements and temperatures when cooking. That's the secret of our product's quality,” said Jacinto.

Through the SETUP, the business acquired mechanical heavy-duty cooking mixer and hydraulic press. Dolor's Kakanin was able to increase production efficiency by 20 percent, production output by 20 percent, and



► The Original Dolor's multi-colored kakanin are not just a feast to the eyes, but also a unique gastronomic experience for those who love the decades-old delicacies.

improved its food safety compliance through the elimination of manual mixing.

“We are very grateful that DOST provided us the necessary equipment that greatly helped us make all the cooking and preparation processes easier,” said Jacinto.

Before DOST's intervention in 2014, the business experienced difficulties in cooking and mixing of ingredients. Everything was manually done, including the squeezing of coconut shreds to extract coconut milk.

DOST shores up halal industry support

By Framelia V. Anonas, DOST-STII
Photos from DOST-STII AV Unit



► The Philippine National Halal Laboratory and Science Center on its inauguration on 25 February 2019.

Two major milestones marked the Philippine halal industry this year as the Department of Science and Technology (DOST) launched the biggest halal laboratory in the country and hosted the World Halal Assembly 2019.

The Philippine National Halal Laboratory and Science Center, inaugurated in Paraíso, Koronadal City, South Cotabato on 25 February this year, is touted as a pioneering facility that supports the country's halal industry. It is established to become a certifying laboratory for halal and clearing house of halal certified products coming in and out of the country.

Leading the inauguration of the PhP 255.5M facility were DOST Secretary Fortunato T. de la Peña and DOST-XII Director Dr. Hadja Sittie Shayma Zenaída P. Hadji Raof Laidan. Leaders and advocates of the halal

industry in the global and local arena witnessed the launch of the facility which is envisioned to help improve the competitiveness of local halal producers both in the domestic and international markets.

Among the guests were Ihsan Ovut, secretary general of the Standards and Metrology Institute for the Islamic Countries (SMIIC)-Turkey; Ihor A. Khovaev, ambassador

extraordinary and plenipotentiary from the Embassy of the Russian Federation in the Philippines; Zafer Soylu, chair and president of the Turkish Halal Accreditation Agency of Turkey;

Vahid Marandi Moghaddam, deputy for Supervision on Implementation of Standards, Institute of Standards and Industrial Research of Iran; Dr. Abdulrahman



► Sec. de la Peña and Dr. Laidan lead the WHAP 2019, with the world leaders in halal industry in attendance (on presidential table)

FEATURES

Alzaid, assistant secretary general of the Muslim World League (Rabita Al Alam Al Islami) of the Kingdom of Saudi Arabia;

Dr. Arthur Y. Pingoy Jr., former provincial governor of South Cotabato; and Mayor Ronnel C. Rivera of General Santos City and Regional Development Council XII chair.

According to Dr. Laidan, the halal laboratory and center will be adopting the Unified Global Halal Standards of the Organization of Islamic Countries-Standards and Metrology Institute for the Islamic Countries (OIC-SMIIC). Adhering to these standards ensures the integrity of halal products.

breakthroughs which not only enable Philippine halal products to penetrate the world halal market but will also contribute towards a sustainable halal ecosystem.

Meanwhile, Sec. de la Peña said that he expects the “sustainability of halal in the country” with the establishment of the halal laboratory.

“In our facilities, there are equipment devoted to halal testing,” he said.

“I see growing markets and expanding product lines,” Sec. de la Peña enthused. “In R&D, we need to do it in the most efficient and optimal manner, such as less wastage.”

Program for the Development of the Halal Industry, which is being run by DOST-XII.

In June last year, the OIC-SMIIC issued a permit to DOST-XII to adopt SMIIC’s unified global halal standards though the Philippines is not an OIC member. The permit allows DOST-XII to certify halal products that will be distributed to all Islamic countries. The products, stamped with the Philippine halal center seal of quality, assures end-users that OIC-SMIIC standards were applied in testing the products.

The testing and certification process to bear the seal of quality assurance was previously done solely in DOST-XII halal laboratory in Cotabato City. Partnering with the laboratory in the testing and certification process are the National Ulama Council and Muslim scientists and experts.

Further, the DOST-XII last year also got the approval of the SMIIC for the use of the halal logo accredited by the Turkey-based OIC institution.



► Participants listen to interesting discussions during the World Halal Assembly Philippines 2019.

World Halal Assembly 2019

The inauguration of the halal lab is part of the World Halal Assembly Philippines (WHAP) 2019 held 26 to 27 February at the EDSA Shangri-La Manila in Mandaluyong City.

Taking off from the theme “Innovation for a Sustainable Halal Ecosystem”, Dr. Laidan—who has been leading WHAP for a number of years—focused on innovation and sustainability as “the driving forces of the modern world. Both harness one behind the other.”

WHAP 2019 focused on innovative

Dr. Laidan, meanwhile, admits that the country still has a long way to go to achieve a “picture-perfect halal ecosystem.”

Further, as the Philippines is not an Islamic country, there are many considerations in implementing the halal industry program, such as the country’s institutional, political, and societal foundation.

However, she says that the country already has started important building blocks that will help spur the halal industry. One of these is the Philippine Science and Technology



► The halal logo accredited by the Turkey-based OIC institution.

13-point recommendation

Before the end of the event, a 13-point recommendation was issued by delegates. The document reflects the following:

Resolved, as it is hereby resolved that this World

- 1. Concretize support of the entire halal community on the institutionalization of the Philippine National Halal Laboratory and Halal Science Center (PNHLSC) as a certifying laboratory for halal technical regulations;
- 2. Philippine National Halal Standards to adopt the Unified Global Halal Standards of the Organization of Islamic Countries-Standards and Metrology Institute for Islamic Countries (OIC-SMIIC);
- 3. Promote and develop initiatives on eco-halal;
- 4. Promote and inculcate halal culture including the strengthening of morals and ethics especially among children and the youth;
- 5. Develop a critical mass of quality human resource in all fields of the halal sector;
- 6. Share best practices thru accommodation of delegates from partner-countries like hosting of halal trainings and study missions and the like for halal exchange of knowledge and benchmarking;
- 7. Encourage and convince Philippine banking institutions especially the Bangko Sentral ng Pilipinas to include in their banking system the Halal Financing System;

Halal Assembly Philippines 2019 themed “Innovation for a Sustainable Halal Ecosystem” being held at Isla Grand Ballroom, EDSA Shangri-La, Mandaluyong, Metro Manila set forth the following recommendations:

- 8. End to end verification of fund sources to be used in halal banking and micro-financing for thorough compliance of the Shariah Law;
- 9. Adoption and implementation of Blockchain for an assured safety of Philippine-made halal products for exports;
- 10. Encourage unified action and synergized efforts of government, academe, and private sectors in complementing and strengthening halal S&T efforts to boost development of the halal sector in the country and contribute upshot in the global halal economy;
- 11. Hosting of similar halal assembly in the country annually to fill the gaps and identify as well as expand areas of collaboration;
- 12. Participation to related halal advocacy and halal events in other countries to create innovation system for strengthening of partnerships and collaboration;
- 13. Reassure inclusion of innovation in all aspects of development endeavors for halal toward the achievement of our common goal for the whole Ummah — a Sustainable halal economy.



Philippine halal industry

In Arabic, halal simply means permissible or allowed, and is frequently applied to permissible food and drinks, including cosmetics and pharmaceuticals.

It is the opposite of haram which means forbidden or not allowed. For meat prepared according to halal, an animal or poultry has to be slaughtered in a ritual way known as zibah or zabihah.

What is interesting is the economic potential of halal products, where the possible consumer demand can reach roughly 1.8 billion Muslims (per 2015 estimates), which is 24.1 percent of the world's total population.

In the Philippines, 6.01 percent (6,064,744) of the country's total population are Muslims, according to 2017 figures of the Philippine Statistics Authority.

Fast Facts:



Possible consumer demand

**1.8 billion
Muslims**

(per 2015 estimates)

24.1 percent

of the total population of the world

Muslims compose
6.01 percent

(6,064,744)

of the Philippines' total population

Source: Philippine Statistic Authority

Lawmakers support safe and peaceful uses of nuke science

Text and photos by Hans Joshua V. Dantes, *DOST-PNRI*



► *DOST Secretary Fortunato T. de la Peña (fourth from left, front) open the Nuclear S&T Exhibit with (L-R) Rep. Arlene Arcillas, House Deputy Speaker Linabelle Ruth Villarica, DOST-PNRI Director Dr. Carlo Arcilla, and Representative Francis Gerald Abaya at the North Wing Annex of the House of Representatives on January 28, 2018.*

In a nuclear S&T exhibit held by the Department of Science and Technology–Philippine Nuclear Research Institute (DOST-PNRI), lawmakers expressed their strong support for measures that will ensure the safe and peaceful uses of nuclear science in the country.

The latest act of support of the House of Representatives is the passing on third reading the bill for the Comprehensive Nuclear Regulation Act. Said Act aims to establish an independent nuclear regulatory body for the Philippines.

“Beyond serving as a showcase of Filipino ingenuity, this exhibit also serves as a wake-up call to us lawmakers to be more supportive to the research and development sector,” said Representative Francis Gerald A. Abaya in his keynote address during the opening ceremonies. Rep. Abaya was one of the earliest authors of the consolidated bill.

“I am confident that through this exhibit, the legislators and staff can better appreciate the role of science in general, and more so by nuclear and radiation applications, in contributing to the collective prosperity of our country,” he said.

The nuclear S&T exhibit featured the latest Filipino-developed nuclear and radiation applications. It was held on January 28 to 30 at the North Wing Annex of the House of Representatives. DOST-PNRI hosted the exhibit in coordination with the House Committee on Science and Technology chaired by Representative Erico Aristotle C. Aumentado.

DOST Secretary Fortunato T. de la Peña and DOST-PNRI Director Dr. Carlo A. Arcilla opened the exhibit with several representatives, namely House Deputy Speaker Linabelle Ruth R. Villarica, and Representatives

Francis Gerald A. Abaya of the 1st District of Cavite, Arlene B. Arcillas of the 1st District of Laguna, and Strike B. Revilla of the 2nd District of Cavite.

Among the technologies featured by DOST-PNRI were its award-winning Carrageenan Plant Growth Promoter which increases the yield of crops, development of mutant varieties of plants with improved qualities, radiation-processed medical products such as Hydrogel Dressing for burns, wounds and bedsores, and radiation-processed hemostats for stopping bleedings.

DOST-PNRI also presented its service facilities such as the Cobalt-60 Multipurpose Irradiation Facility, the Electron Beam Irradiation Facility, as well as its regulatory functions and emergency preparedness and response capabilities.



Fashionable *couture* for *DOST* *employees*

By Enrico A. Belga, Jr., *DOST-STII*
Photos from Gerardo G. Palad, *DOST-STII*

Take a look at the uniform designs made for the Department of Science and Technology (DOST) and presented during the Textile Stakeholders Conference at the Philippine International Convention Center in Pasay City on 31 January 2019.

The TELA (Textiles Empowering Lives Anew) Conference brought together the textile stakeholders and advocates from various sectors of the government, academe, private institutions, and social enterprises to focus on the production, utilization, and the challenges encountered in the industry of the Philippine Tropical Fabrics (PTF). The uniforms, which were modeled by selected employees from six government agencies, contain natural textile fibers like pineapple and abaca produced, spun, woven, and finished in the country.

The DOST-Philippine Textile Research Institute (PTRI) advocates the use of tropical fabrics as mandated by the PTF Law which prescribes using local tropical fabrics for uniforms of government officials and employees. The event was made possible by DOST-PTRI in celebration of the Philippine Tropical Fabrics Month.

FEATURES





DOST-funded projects in Cavite headline S&T caravan

Text and photos By Enrico A. Belga, Jr., *DOST-STII*

When it comes to supporting micro, small, and medium enterprises, the province of Cavite has proven to be a staunch partner of its homegrown industries.

With support from the Department of Science and Technology (DOST), these enterprises were the highlight of the first science and technology (S&T) caravan for 2019 held on 1 February in Cavite.

The 2019 S&T caravan was organized by the Philippine Association for the Advancement of Science and Technology (PhilAAST).

Established on 15 September 1951, the PhilAAST is an “SEC-registered, non-stock and non-profit scholarly

organization of scientists and technologists in the country that aims to encourage researchers, scientists, and technology developers to join the organization in promoting the value of science in the community.”

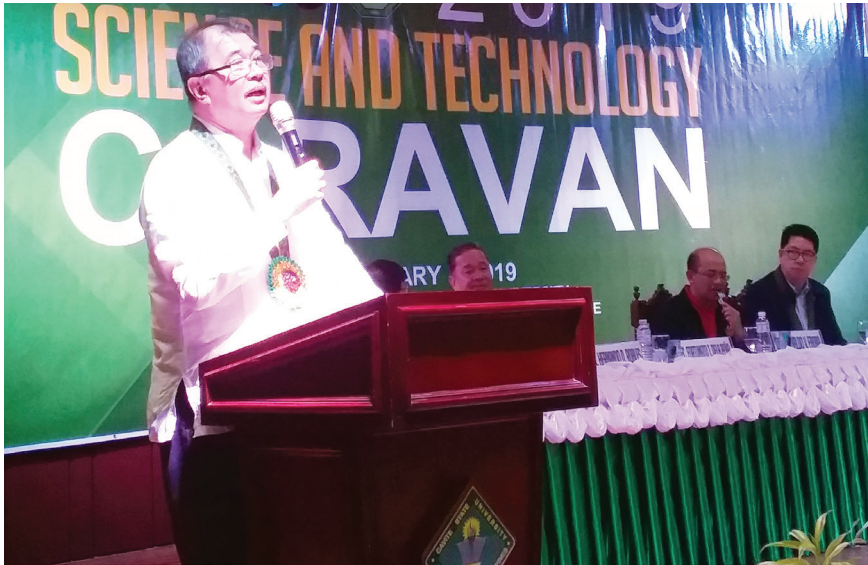
DOST Secretary Fortunato de la Peña, an adviser for PhilAAST, attended the event’s opening ceremony at the Cavite State University (CvSU) in Indang, Cavite. In his message, Sec. de la Peña said that the CvSU is known for its aggressive and dedicated research programs in agriculture.

The science chief also talked about the DOST’s achievements and ongoing engagements, such

as the overwhelming requests that Philippine embassies around the world are getting for international collaborations. He added that he has never experienced anything like this before during his 14 years as DOST Undersecretary.

Dr. Jaime C. Montoya, PhilAAST president and executive director of the DOST-Philippine Council for Health Research and Development (PCHRD), gave a brief orientation and led the induction ceremony for new PhilAAST members composed of faculty and staff, officials from the local government unit (LGU) of Indang, various stakeholders, and private individuals.

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DOST Secretary Fortunato T. de la Peña gives his inspirational message during the opening ceremony of the PhilAASST's 2019 Science & Technology Caravan at the Cavite State University.



Secretary de la Peña visits the Philippine Coffee Quality Center located in the Cavite State University compound.

A personnel of the Philippine Coffee Quality Center inspects the roasted coffee beans being mixed by the coffee bean roaster machine.



After the program, Sec. de la Peña, along with visitors and members of the media, were brought to locations of DOST-assisted projects in Cavite. Among the enterprises visited were the Coffee Quality Processing Center, the Agriculture and Food Technology Business Incubator Production Area and Coffee Genebank, and SciCAT for the Convergence of Agriculture and Tourism site.

The caravan also went to the L.A. Machineries Corporation, the Bacoar Mussel Depuration Facility, and the Bacoar Food Processing Center.

One of the sites visited was the Silan Agri-Farm in Indang, Cavite

owned by Magsasaka Siyentista (Farmer Scientist) Edilberto Silan. The farm, which produces dragon fruit, banana, papaya, cucumber, eggplant, bitter melon, and other vegetables, is a beneficiary of the DOST for more than a decade. Silan is also a farmer-cooperator to the CvSU and the University of the Philippines Los Baños.

Another notable enterprise visited during the caravan was the Bacoar Food Processing Center and the Community Fish Landing Center at Brgy. Sinaguelasan, Bacoar City. The food-processing center, a community-based livelihood project

that can process up to 90 kilograms of raw mussels in a day, was made possible through the partnership of the DOST-CALABARZON and Bacoar City LGU.

Bacoar City Mayor Lani Mercado-Revilla accompanied Secretary de la Peña as he tried the tasty *tahong* (mussels) empanadas prepared by the staff at the food processing center.

The caravan was conducted in collaboration with the DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, the DOST-CALABARZON, and the CvSU.



FEATURES

By Dionard N. Mendova, *DOST-Caraga*
Photos from DOST-Caraga

Caraga's Fabrication Laboratory (FabLab) helps turn innovative ideas into reality through its technical prototyping, design, and digital fabrication workshops.

Located at the Mechatronics Building in Caraga State University, the Caraga FabLab or Fabrication Laboratory brandishes computer-controlled tools that help fabricate technology-enabled products.

A fabrication laboratory (FabLab) is a one-stop workspace that serves as an “environment for innovation” for anyone who wants to design, develop, and fabricate products. It started in the United States and now has a global learning network of all accredited fab labs.

At first glance, the laboratory may look like a facility where entrepreneurs go for training and equipment for short-run production. But in the larger realm of things, the lab has far greater tasks: to help create more products, generate jobs, and increase economic activity in the region. Improving the production of micro, small, and medium enterprises (MSMEs) through the FabLab reduces cost and eventually increases their profit.

FEATURES

Since its launch on 30 October 2018, FabLab Caraga has been offering services such as 3D printing, which is useful in developing prototypes and sculptures. The machine helps cut costs by reducing the amount of storage and time.

The FabLab is also home to small and large Computer Numerical Control (CNC) cutting and engraving machines, all computer-controlled and help speed up production process.

At its core, the Caraga FabLab has engineers for consultation services as

well as in-house and volunteer artists that can help conceptualize models. Other services available at the FabLab are graphic design, print and cut machine for visual materials, welding, and CNC metal milling machine.

The CNC metal milling machine that can cut vast type of materials such as steel, stainless, aluminum, titanium, and iron was funded by the Department of Science and Technology-Caraga for PhP 1.5M. Local government units and other government agencies also committed support to the Caraga FabLab.

Established by the Department of Trade and Industry thru its Shared Service Facility program at a cost of PhP 12 M, the FabLab encourages collaboration of local and global producers, manufacturers, and artists to develop designs and create prototypes for mass production. Meanwhile, the Caraga State University (CSU) provided the building.

“It’s a problem when you have an idea but you don’t know how to execute it because you lack expertise, financial resources, and tools to make your idea work. Here in FabLab, we encourage collaboration between our engineers, designers, programmers, and the clients to make ideas plausible,” told Engr. Ronieto N. Mendoza, FabLab manager.

The Caraga FabLab also serves as an outlet for the academe’s research endeavor. Science investigatory projects of high school students have been carried out in the laboratory with projects like entries for robotics competitions and exhibits in national and international levels.

The FabLab is currently working with the Department of Education-Caraga and students for their entries to national robotics competition this year.

With the help of other government agencies, Engr. Mendoza hopes that there will be more Filipino engineers and designers trained in technologies and advanced machines to help address the problem on high fabrication cost and lack of resources in the country.



► DOST, DTI, and CSU officials at the grand launch of the Caraga FabLab.



► FabLab Manager Engr. Ronieto Mendoza (right) with Provincial Science and Technology Center-Agusan del Norte Director Meriam B. Bouquia.

FEATURES

Packaging and Labeling Innovation Center (PLIC)

To beef up the FabLab-managed Packaging and Labeling Innovation Center (PLIC), DOST-Caraga turned-over a Box Prototyping machine and a Jar Blowing Machine. Both equipment, worth Php 7M in total, are part of DOST-Caraga's Grants-In-Aid project with CSU intended to provide a common service facility for proper packaging and labeling technology for MSMEs and startups in the region.

In addition, DOST-Caraga Regional Director Dominga D. Mallonga is beyond thankful for the support of CSU and other agencies in making these efforts possible.

"This will serve as a complement to our existing Food Innovation Center in the region, also located in the university. We are hoping for more

projects to come," said Dir. Mallonga on her speech during the turn-over ceremony on 13 February 2019.

Engr. Noel M. Ajoc, chief of DOST-Caraga's Technical Support Services Division, said that the innovation center will provide MSMEs readily acceptable and affordable packaging materials, consultancy to further improve product, design quality upon obtaining Food and Drug Administration accreditation, and assistance for MSMEs in testing their products.

After the first quarter, FabLab will start conducting trainings and workshops on machine operations and design to encourage more people, especially MSMEs to utilize technology available in the facility.

"We hope someday that it will be a norm for Caraganons to visit the

FabLab," said Engr. Mendoza.

Currently, the Caraga FabLab is in need of volunteers who are interested to collaborate with them in terms of workforce. For those interested, please contact the FabLab management through the Facebook page www.facebook.com/fablabcaraga/.

The management is also hoping for more national and international linkages to expand the FabLab's reach.

"The patenting office and TBI hub-Navigatú are in the same building so it will be easier to examine and market the products and innovations," said Engr. Mendoza.

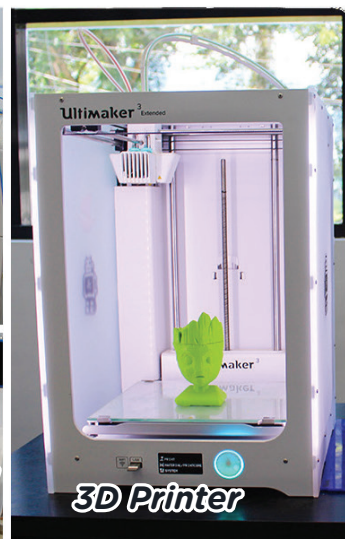
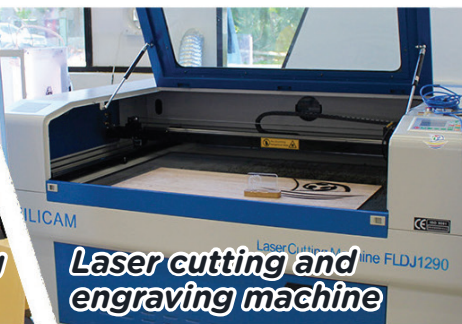
CSU extends gratitude to DOST-Caraga for supporting them in terms of advanced equipment and more R&D initiatives, and also to DTI for pushing the creation of FabLab.



► DOST-Caraga Dir. Mallonga (second from the left) hands the key to the PLIC equipment to CSU President Dr. Anthony M. Penaso (third from left) along with other university officials.

FEATURES

Facilities in the Caraga FabLab





For Study and safety Tremor-proof tables for tots

By Allyster A. Endozo, *DOST-STII*

The research team developed not only a resilient study desk for kindergarteners but also a warning system when earthquakes occur, a safety infrastructure for students to use, and a learning tool to passive disaster preparation of young children.

“The Big One” is a cataclysmic event that the Department of Science and Technology-Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS) has been forewarning for years. Expected to shake up to magnitude 8.5, its massive force can substantially destroy populated areas in Metro Manila, including residential areas, businesses, and schools.

To help educational institutions become more prepared for quake-related disasters such as “The Big One”, a group of researchers from the Philippine Normal University (PNU), De La Salle University, and Technological University of the Philippines developed a high impact-proof automated study desk for preschool children.

Called “LAMESA” for Life-Saving Automated Mesa to Endure Seismic Activity, the desk serves as

“a survival tool and a teaching aid to initiate ‘active’ disaster preparation,” according to PNU’s Dr. Marie Paz E. Morales, research team leader.

“La mesa” or “mesa” means “table” in Filipino.

LAMESA combines technology with capacity building in terms of knowledge and infrastructure to best address such probable disaster, particularly in educational institutions.

According to the research team, they developed not only a resilient study desk for kindergarteners but also a warning system when earthquakes occur, a safety infrastructure for students to use, and a learning tool to passive disaster preparation of kindergarten.

“Though we instill earthquake preparation in the curriculum or in the lessons teachers teach, this ‘passive’ preparedness may not holistically

FEATURES

develop survival skills among the young,” said Dr. Morales.

She said that in developing the LAMESA prototype, her team held extensive interviews and consultations with early childhood education experts on how the concepts of disaster risk reduction and preparedness may be integrated in the kindergarten curriculum using the prototype.

The team envisions LAMESA to spur high survival rates in case of a devastating earthquake in schools.

Safety desk

The desk—measuring 1.22 m in length, 0.69 m in width, and 3.327 cm in tabletop thickness—uses lightweight but highly strong and elastic materials to comply with kindergarten standards. Its height of 0.57 m ensures that up to four kindergarteners, with an average height of 0.91 m (or three feet), will be able to hide under the table.

The steel table top is coated with epoxy paint to make it durable and slick, while the steel legs come with rubber footings to minimize sliding during tremors. Its center legs, meanwhile, support a storage bin with sliding door for lighting devices plus ample food and water supplies for up to nine kindergarteners.

Moreover, LAMESA is equipped with an accelerometer, a device that senses motion, which feeds seismic measurements to a Wi-Fi-enabled microcontroller. This microcontroller then simultaneously triggers the actuator which causes the table top to fold 16 degrees upward.

LAMESA likewise has a built-in alarm system that activates when vibration levels are above-normal. Further, it has a 13-bit liquid crystal display which shows the intensity level and instructs people to evacuate when needed.

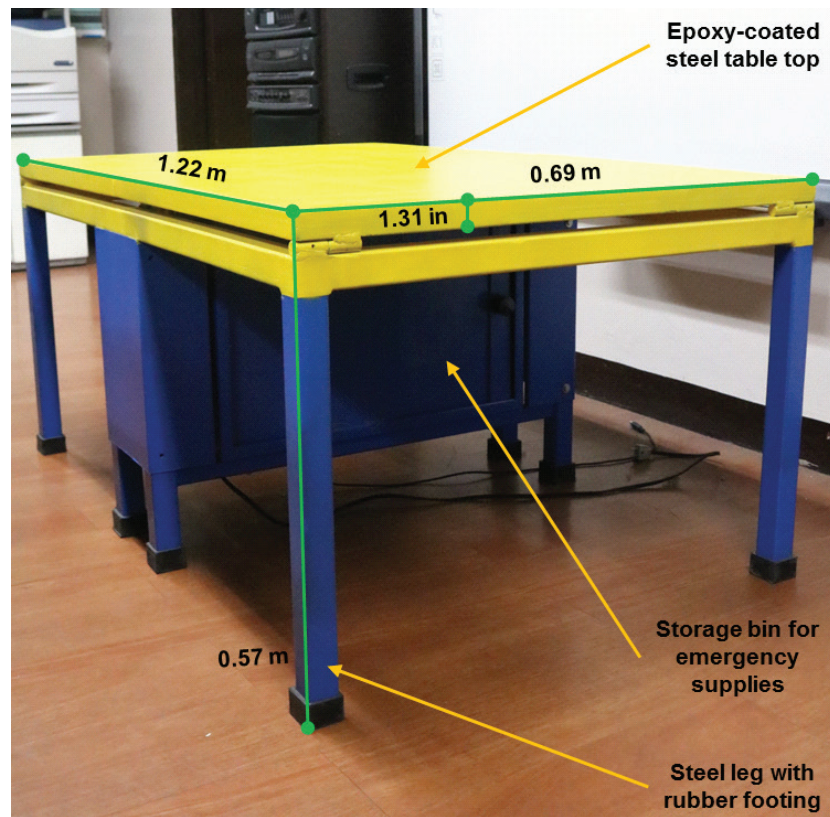
LAMESA’s system and program design boast of good peak ground acceleration. With a fixed response time of four seconds, this allows the children to duck, cover, and hold much sooner.

“[On] average, a strong earthquake that may cause debris lasts about 30 to 40 seconds. This means that LAMESA’s four-second response time provides ample time to shield children from debris during an earthquake,” Dr. Morales emphasized.

aesthetics, and mechanism functionality. Some areas though need to be improved, such as surface hardness, texture, and wiring placement.

The researchers ensured that a modified design would undergo strength test and include auxiliary materials like safety reminders and training kits.

“We are [also] contemplating on using fiberglass instead. We also thought of using a wall sensor to manage a set of desks,” Dr. Morales revealed.



More improvements ahead

LAMESA’s prototype design is a collective effort of a group of engineers, geology and volcanology experts, machinists, woodworkers, and technicians. The final design was evaluated by various stakeholders including parents, teachers, school principals, and a district supervisor.

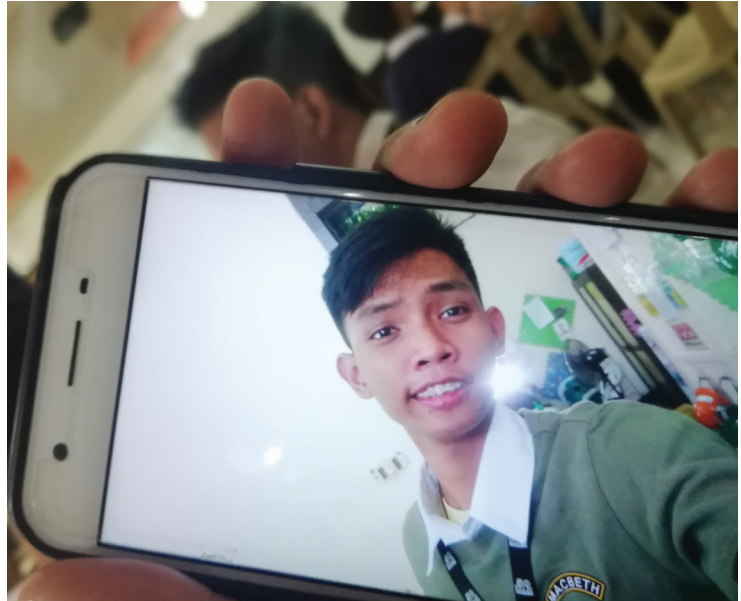
Overall, evaluators gave LAMESA a big plus for its features, design and

The full article of the study “Coupling School Risk Reduction Strategies with LAMESA (Life-Saving Automated “Mesa” to Endure Seismic Activity) for Kindergarten” can be downloaded for free in the Philippine Journal of Science Volume 148 No. 1 at philjournalsci.dost.gov.ph. The photos were taken from the published paper.

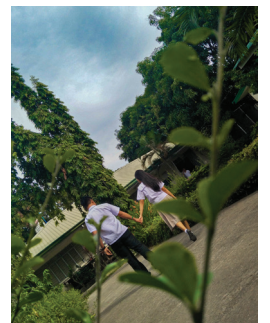
FEATURES

On 04 December 2018, the DOST-Science and Technology Information Institute held a photography training at the Philippine School for the Deaf in Pasay City, as part of its Corporate Social Responsibility program. It's amazing that though these youth are hearing-impaired, they have a wonderful view of the world, as reflected in their photography. We are sharing some of their outputs in this issue.

Through the Eyes of the Deaf



FEATURES



Chance of a lifetime for this local balut vendor

Text and photos by *PSTC-Zamboanga Sibugay Province*



In business, opportunities don't always come knocking in one's door. But for Calixto and Maricris Huit, they saw an opportunity and coupled it with hard work to become what they are now. With the help of the Small Enterprise Technology Upgrading Program (SETUP) of the Department of Science Technology (DOST), they greatly improved their business operations.

Marc's Balut is the business owned and managed by the Huit couple of Ipil, Zamboanga Sibugay. Calixto Huit is a former bus conductor who once

tried to sell "balut" (a Filipino delicacy which is a duck embryo steamed and eaten from the shell) on sidewalks. Upon learning of the big potential of the business, he engaged in balut processing and became a successful entrepreneur.

The single-proprietorship business started with an initial capital of PHP 50,000 in 2007. It started operating with a one-unit egg incubator that has a capacity of 24,000 eggs per load.

The product was quickly patronized by the public, thus increasing public demand. For three

months, the firm was able to increase its revenue and was able to purchase another unit of incubator with a capacity of 26,000 eggs per load. These two incubators of the firm were both manually operated.

The increase in demand and the limited capability of the firm to meet the growing market of the product, pushed the owners to find ways on how to increase production.

The couple found out DOST's SETUP and requested assistance to upgrade the firm's processing capabilities.

FEATURES



Through SETUP, the firm was able to acquire another egg incubator, this time equipped with digital thermostat control system and an 80,000-load capacity per cycle for the phase one implementation of the project.

The project was recognized as the Best SETUP Adoptor in 2015 in Region IX and received a recognition and award during the National Science and Technology Week 2015 at SMX Convention Center, Manila.

The award was based on several achievements of the firm as a result of the SETUP support. One, the firm had an increase in the production quality of “balut sa puti” (early stages

of balut where the embryo is still underdeveloped). Two, the firm was able to provide employment to nine people from the community. Three, there was an increase in production capacity from 60,000 to 80,000 eggs per cycle. Four, there was a decrease in rejects from a previous 10 percent to a negligible one percent. Fifth, the technology enabled the firm to reduce its mortality rate by five percent because of the controlled heating system during incubation period.

The collaboration between Marc's Balut and DOST-IX was such a success that the proponent proceeded to its second phase implementation, the “Upgrading the Duck Hatchery

Facility” which further reduced mortality and produced quality ducklings.

Indeed, grabbing the opportunity was all worth it for Marc's Balut.

(Editor's Note: This article, with minimal editing, is an output of the Training on News and Feature Writing held in Zamboanga City for DOST-Zamboanga on 19 March 2019. The training is an activity of the “Strengthening the Core” project of the “Communicating Science for the People” program.)

#ScienceForThePeople

Science chief lauds Physics enthusiasts

The participants of the 41st Annual National Physics Seminar-Convention of the PPS at the SAC, Maximo College, Dumaguete City.

“THE IMMENSE importance of physics in our lives cannot be discounted in our daily activities,” emphasized Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña in his speech during the 41st Annual National Physics Seminar-Convention of the Philippine Physics Society (PPS) on 10 April 2019 at the Maximo College, Dumaguete City, Negros Oriental.

Before an audience of more than a hundred physics teachers, students, and researchers from different regions of the country, Sec. de la Peña highlighted the important role of physics in many aspects of our lives.

“The internet would not have been possible without the physics-based ideas that played a huge role in the development of computers and the World Wide Web,” Sec. de la Peña cited as an example.

The science chief added, “Whenever we have our blood pressure checked or—in the case of expecting mothers—avail of ultrasound as part of prenatal care, it is physics knowledge

that have made them standard medical procedures.”

The Secretary also highlighted the achievements of the DOST in terms of research and development, technology transfer/productivity through science and technology (S&T), S&T services, human resource development, and disaster risk reduction and climate change adaptation.

He expressed his “fond hope that members and prime movers of the Philippine Physics Society shall be forever committed to develop lifelong learners who are logical, analytical, creative, and critical thinkers who can share their talents and skills toward national development and inclusive growth.”

Sec. de la Peña also lauded Dr. Gerardo C. Maximo, the founder and prime mover of the PPS for his leadership and guidance since the establishment of the organization some 45 years ago.

For the part of the PPS, Dr. Maximo reaffirmed their mission of being committed



DOST Secretary Fortunato T. de la Peña delivers his speech during the 41st Annual National Physics Seminar-Convention of the PPS.



Dr. Gerardo C. Maxino (left), founder of PPS, awards a certificate to DOST Secretary Fortunato T. de la Peña (right).



(L-R, seated): Atty. Gilbert R. Arbon, Dr. Gerardo C. Maxino, Engr. Edilberto L. Paradela, Sec. Fortunato T. de la Peña, Dr. Loreto B. Feril Jr., Bernarda G. Perez, Vivian S. Cabando, SRS II of DOST-VII, and Engr. Jesus F. Zamora Jr. (L-R, standing) Staff from PSTC-Negros Oriental: Rommel L. Romagos, Engr. Joel O. Legaspi, and Sean Adrian T. Guardiano.

to serving the people using the principles of physics and by increasing the capability of the members to link, teach, and do researches relevant to the actual needs of the communities.

Also present in the event were Dr. Loreto B. Feril Jr., researcher from the Fukuoka University and one of the event's keynote speakers;

Engr. Edilberto L. Paradela, regional director of DOST-VII, Engr. Jesus F. Zamora Jr., assistant regional director for Technical Operations, DOST-VII; Bernarda G. Perez, assistant regional director for Finance, DOST-VII; and Atty. Gilbert R. Arbon, provincial director of PSTC-Negros Oriental.

CALL FOR PAPERS

PJS SPECIAL ISSUE ON NUCLEAR SCIENCE AND TECHNOLOGY

The Philippine Journal of Science (PJS) is now accepting submissions for a special issue on Nuclear Science and Technology (NST). This special issue is dedicated to presenting and exploring discoveries, applications, and benefits of NST in the Philippines.



Photos from DOST-PNRI

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The deadline for submission is **JUNE 15, 2019**. Authors are advised to consult the most recent issue of the Philippine Journal of Science for the current format and style.

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