

# HORIZON

University of the Philippines Los Baños Vol.5 No.1

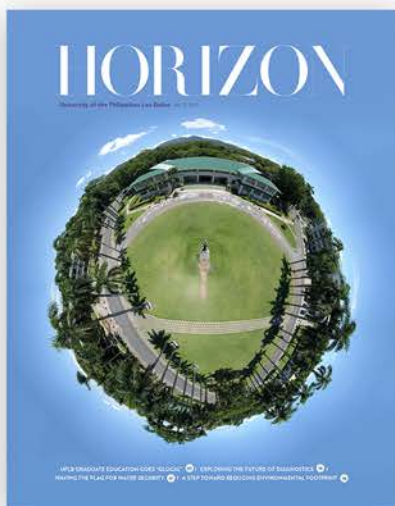


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The **UPLB Horizon** magazine showcases news and feature articles on research and extension, literary pieces, and information of general interest to UPLB and its stakeholders. Please email your contributions to OPR: opr.uplb@up.edu.ph.

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## About the cover



On the cover is an image of the UPLB academic core with the Oblation at the center, edited around a spherical form akin to that of a globe. The editing technique, called "little planet," symbolizes the global presence of UPLB through academic and research partnerships formed and nurtured through the years, now numbering over 100 in the most recent count.

These partnerships expand the scope of education and learning beyond UPLB and enable it to provide students access to resources and opportunities available in partner universities. This is especially true through the freshly minted Dual PhD by Research program in which UPLB partnered with the University of Reading, University of Liverpool, Curtin University, and UP Mindanao.

At the core of public service as represented by the Oblation at the center of this "little planet" is the offering of a UP education by UPLB in Davao through the UP Professional School for Agriculture and the Environment and in other parts of the country through its off-campus programs.

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# EDITOR'S NOTE

UP articulated in Republic Act 9500 or the UP Charter of 2008 its mandate to perform a unique and distinctive leadership in higher education, among others, to serve as a graduate and research university. Since then, UPLB has actively moved toward becoming one and maintaining such a stature. "Becoming and maintaining" reflects the constant state of flux a research and graduate university is in, implying the need for its leaders to be always on their toes for opportunities to strengthen itself as one.

The UPLB leadership has created and seized opportunities to be a leading graduate and research university in the country and in Asia-Pacific, and to be at the frontline of innovation and creativity in its niche areas.

Thus, the university has seen the institutionalization of collaborative postgraduate degree programs and creation of interdisciplinary research studies centers that take advantage of UPLB's rich knowledge and intellectual capital. These collaborative efforts are anchored on partnerships that expand the scope of education and help provide students access to resources and opportunities outside UPLB.

UPLB as a graduate university does not only produce professionals with post graduate qualifications. It spurs research and enhances its ability to generate knowledge, increase innovation and creativity, and ultimately contribute to the country's economy.

Wilhelm von Humboldt, Prussian minister and founder of the University of Berlin in 1810 (renamed Humboldt University in 1949) said as much: "Most of tomorrow's economy is being born today in university research laboratories." Let research laboratories help in forming tomorrow's progressive economy.

IN BROAD STROKES

# Interdisciplinary collaboration is the way to go

Dr. Fernando C. Sanchez, Jr.

There are two concepts that we keep referring to when we talk about our graduate degree programs and niche research areas: inter/multidisciplinarity and collaboration. Both of these concepts allude to the importance of integration.

In pursuit of our vision-mission of making the University of the Philippines Los Baños (UPLB) a globally competitive graduate and research university contributing to national development, we have made use of these concepts in tandem; because in order to tackle complex real-world problems, an academic, scientist, or researcher must make use not only of knowledge and techniques from a broad range of disciplines but also the insight and experience of other people.

UPLB's roadmap toward becoming a graduate, research, and public university in accordance with the UP Charter of 2008 is based on the recognition that the university needs to strategically integrate resources and to form collaborations with other higher educational institutions so that we can make use of our strengths for our mutual benefit.

For the past several years, we have assiduously pursued the institutionalization and implementation of joint and dual graduate degree programs. We established the UP Professional School for Agriculture and the Environment in Panabo City in Davao del Norte, thereby placing UPLB in a good position to participate in agricultural development in Mindanao.

Such brings us closer to our goal of inclusive development. We intend to make graduate education widely accessible. We want to be able to provide quality training to people who can only do graduate work part-time

and in their current location because of professional and personal circumstances.

UPLB also wants to build enriching programs through collaborative partnerships. Our efforts at collaboration and building networks have helped open the doors for more intensive partnerships with universities abroad, including those in Europe. We have signed a Memorandum of Understanding with Agreenium, the French Agricultural, Veterinary, and Forestry Institute. This opens areas for academic collaboration and capacity building through which the university can help develop sustainable societies.

UPLB's Interdisciplinary Studies Centers (IDSCs), a number of which were initiated several years ago by my predecessor, former Chancellor Rex Victor O. Cruz, allow the university to carry out its mandate to serve as a research university in its fields of expertise and specialization.

Our IDSCs are involved in work on climate change, biofuels, food security, nanotechnology, integrated natural resources and environment management, and natural products. We have created more IDSCs over the past few years, those which deal with water security, biosensors, and life cycle assessments for evaluating the environmental impacts of technological products. UPLB's IDSCs aim to address complex societal concerns that need the expertise of scientists and researchers from various fields as well as contributions from stakeholders.

In our postgraduate programs and in research, we are taking the path towards interdisciplinary collaboration. Indeed, no one stands alone. The university cannot do its work in isolation. Interdisciplinary collaboration is the way to go.

# UPLB GRADUATE EDUCATION GOES “GLOCAL”

JOSEPHINE M. BO

The past years have seen how UPLB has intensified the offering of graduate programs in new modalities to respond to being “glocal,” or to global competitiveness and to being relevant to local needs at the same time.

Global competitiveness is necessary with the internationalization of higher education while local relevance is the minimum requirement for the national university.

UPLB, in the recent past, started offering new modes of graduate education that aim to respond to both.

## **BUILDING KNOWLEDGE CAPITAL IN MINDANAO**

In 2016, UP through UPLB, set up the UP Professional School for Agriculture and the Environment (UP PSAE) in Panabo City in Davao del Norte, Mindanao, the “heart of the center of agriculture in the country.”

UP PSAE aims to fill the need for professionals in environment management, agriculture, fishery, and forestry to help sustain the huge outputs of Mindanao in these sectors.

It will set up its home at Agriya City, a flagship project of Damosa Land Inc. and Anflo Management and Investment Corporation that will donate both the UP PSAE land and buildings.

UP PSAE is now offering MS and PhD Environmental Science.

## **OFF-CAMPUS PROGRAMS**

Before the UP PSAE’s establishment, UPLB had already been offering graduate programs off-campus since 2013.

In the past three years, it offered more off-campus programs in partnership with government line agencies that wanted their personnel to pursue

postgraduate degrees while continuing with their work.

Among these were MS programs in development communication, natural resources conservation, development management and governance, and business management and entrepreneurship.

Currently in the works is a postgraduate program on finance and taxation that UPLB will implement in partnership with the Department of Finance.

## **JOINT PROGRAMS**

In 2015, UPLB, UP Visayas Institute of Fisheries Policy and Development Studies (IFPDS), and the UP Marine Science Institute (MSI) in UP Diliman offered the Professional Masters in Tropical Marine Ecosystems Management (PMTMEM). PMTMEM builds the capacity of on-the-job environmental managers in marine-protected areas through a multidisciplinary and integrated systems approach.

PMTMEM taps the multidisciplinary expertise and vast experience of faculty in well-established programs at the UP MSI, the UP Visayas’ IFPDS, and UPLB’s School of Environmental Science and Management and College of Forestry and Natural Resources.

Another joint program is the MS in Food Security and Climate Change under the University Consortium for Graduate Education in Agriculture and Natural Resources. It is funded by the European Commission’s ERASMUS + Capacity Building for Higher Education and offered with Kasetsart University in Thailand, Universiti Putra Malaysia, and Institut Pertanian Bogor and Universitas Gajah Mada in Indonesia.

The MS FSCC takes a holistic approach in studying food security and climate change with the student being exposed

to knowledge and cultural perspective from two universities in Southeast Asia. The student research is jointly supervised by advisers from these two universities.

## **DUAL PhD BY RESEARCH**

The Dual PhD by Research is the first of its kind to be approved in the UP System. The first time that it is being implemented by UPLB is with the University of Reading in the UK.

Students will receive double degrees from UPLB and from the partner university. This is aimed at providing Filipinos access to niche courses in the UK and other partner universities through the Joint Development of Niche Programs under the partnership of the Commission on Higher Education and the British Council.

This modality may also be implemented with Curtin University in Australia and UP Mindanao, as well as with other universities that will partner with UPLB.

## **UPLB AS HOST OF THE NAGOYA UNIVERSITY ASIAN SATELLITE CAMPUS (NUASC)**

UPLB Graduate School hosts the Nagoya University Asian Satellite Campus, the only Philippine HEI to do so and one of only eight host-partner countries in the world. NUASC offers the Transnational Doctoral Programs for Leading Professionals in Asian Countries.

The NUASC in UPLB offers doctoral degree in the fields of international development and bioagricultural sciences.

NUASC recently accepted its fourth batch of students. Interested students may avail themselves of the NU-UP Joint PhD Research Scholarships for UP Faculty and REPS.



Graphics designed by Freepik

# ON UP'S IMPROVED UNIVERSITY RANKING

KRISTINE E. ARAGUAS

The past few years have seen the University of the Philippines move up in the Times Higher Education (THE) Asia-Pacific University Ranking, as well as in the Quacquarelli Symonds (QS) Asia University Rankings for 2019. From the 151-160 bracket in 2018, UP went up to the top 101-110 universities of the Asia-Pacific Region in 2019.

In the 2019 QS Asia University Rankings that was released in October 2018, UP



CRUZ

went up from its rank of 75th in 2018 to 72nd in 2019.

Criteria for both data providers of university excellence find commonalities in academic reputation surveys, faculty-student ratio, number of staff with PhD, research standing, citations, and internationalization, among others. Data for UP comes from all of its eight constituent universities.

To tap into respected views on university ranking, the Horizon solicited the opinion of two faculty members



ANCOG

who are known for their contributions to the body of knowledge in their respective fields.

These faculty members are Dr. Rex Victor O. Cruz of the College of Forestry and Natural Resources and Dr. Rico C. Ancog of the School of Environmental Science and Management. Both are UP Scientist III recipients, the highest level of recognition under the UP Scientific Productivity System, which aims to support the development of science and technology and encourage and reward scientific productivity in the university.

## WHAT DO YOU THINK CONTRIBUTED TO UP'S IMPROVED INTERNATIONAL UNIVERSITY RANKING?

### DR. REX VICTOR O. CRUZ:

UP did so well in 3 of 5 criteria, namely: teaching, research, and citations, all of which increased substantially from 2017 to 2019. This is likely due to the investments made by UP in upgrading its facilities for teaching and research, and in providing more opportunities for our younger faculty and researchers to get advanced degrees and conduct cutting edge researches.

Our surge in the rankings, particularly in research and citations could be attributed to UP's investment in providing substantial incentive mechanisms to increase scientific productivity such as the UP Scientific Productivity Awards and the One UP Professorial and Faculty grants. These investments promote greater appreciation among our faculty of the contribution of research outputs in upgrading the quality of contents of teaching materials. Lastly, the growth in our interdisciplinary research programs has been noteworthy.

### DR. RICO C. ANCOG:

The university's internationalization efforts have significantly contributed to our recent THE ranking. We have made significant strides to improve instruction in UPLB, particularly through the incorporation of outcomes-based education. Likewise, the strong research culture in UPLB has been bolstered with a good incentive and reward system that encourages not only strong disciplinary research pursuits but also inter-disciplinary and trans-disciplinary undertakings.

Surely, the major factor is the university's strong human capital, its people who teach and research not simply for the sake of science and arts per se, but for the wise use of the best of science and arts for nation building, as well. We have been capitalizing on this nationalistic outlook as we continue to strive towards distinctive excellence, which in turn enables us to know our place in the global arena.

## HOW CAN UPLB FURTHER CONTRIBUTE TO AND HELP SUSTAIN THE IMPROVEMENT IN UP'S INTERNATIONAL UNIVERSITY RANKING?

### DR. RVO CRUZ:

We have little room to be content as our performance in the area of industry income and international outlook suggests that we need to do more to elevate our marks to levels higher than in 2017. We need to exceed our past efforts to make our teaching, research, and extension programs more responsive to the needs of the industry and business sector by forging more intimate collaboration with them. We need to institute more effective ways of increasing the readiness of graduates to competently practice their acquired knowledge and skills with shorter learning curves. This means reshaping our curricular programs according to the competencies needed by the industry and business sector. It also means, and perhaps more importantly, that we need to prepare our students to have the ability to build their own business enterprises.

Likewise, our rating in the area of international outlook suggests that we need to ramp up our efforts on internationalization without compromising our primary obligation to support national development. We ought to secure more resources that will enable us to upgrade our facilities for teaching and research at par with international universities, to increase further our ability to send our faculty and researchers to other countries as graduate students or visiting/exchange professors and scientists, and to host more visiting professors, researchers, and students from other countries.

Specific to further growth in research and citations, we ought to sustain support to our various interdisciplinary programs that will put us in a position of greater ability to provide comprehensive solutions, tools, and knowledge to both the industry and the public sector, in addressing complex socioeconomic and environmental concerns. It will also be worthwhile to increase the support for upgrading the quality and international reputation of our local scientific journals particularly those that are already indexed. Finally, providing substantial support for the publication of worthy graduate and undergraduate students' research outputs should be considered.

**DR. RC ANCOG:**

We need UPLB to be able to really imagine big, to think big, and to never cease to think bigger! We need to identify long-term vision for UPLB and pursue models on instruction-research-extension/public service that strategically wield nationalistic and global outlooks; enable the university administration to be more efficient and continue being outcome-focused and partial towards a more transformative learning system; and produce highly competent graduates who are output-oriented and with strong outward- and service-oriented outlook in life.

We need students to learn the various routes of theory-to-practice and inculcate in them grit, innovativeness, and the need to be output-driven. We need to always remind them not just to become the thought leaders but also leaders of actions.

For research, we need to have sustainable cadre of researchers and scientists who are adept in the research-to-publication cycle. We need to double our efforts to have more faculty

members to do more researches on topics that have high value to science and with outputs that are of practical use to society. We also need to find more creative ways on how the time and effort lag between data collection and journal article publishing can be effectively shortened, and make this a norm in the UPLB community.

The possibility of coupling the technical background of our researchers with business and entrepreneurial savvy would be instrumental for resource generation and in ensuring that every step of the research process does not just aim for scientific value but as well as clearer socio-economic benefits.

The role of the alumni is also very critical here as the reputation of the university depends on the quality of its alumni base. Some more creative avenues for our alumni to contribute and participate in various instruction and research activities would be critical to cut the likely gap between what we currently do within the university and what is needed in actual practice.



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# UPLB BRINGS POSTGRAD NICHE PROGRAMS TO MINDANAO

MARK JAYSON E. GLORIA

After a week of teaching, Sheila Kylene Tawas makes sure that the needs of her two children for the weekend are taken care of before she embarks on a trip each Friday.

At 6 PM, she hops on the bus that will take her from the coastal town of Cantilan, Surigao del Sur in northeast Mindanao to Davao City at 3 AM the next day.

Meanwhile, 16 people from all over Mindanao are also going through this routine. It is taxing and physically demanding, but this will take them to the road toward their professional development.

All of them are pioneering postgraduate students of the UP Professional School for Agriculture and the Environment (UP PSAE) in Davao City, an extension campus of UPLB, which officially opened its doors in the second semester of AY 2018-2019. The school aims to help accelerate human capital development in Mindanao in UPLB's niche programs.

Sheila admits that pursuing a postgraduate degree is very challenging, more so in

these trying circumstances, but this instructor from Surigao del Sur State University in Tandag City is determined, not only to earn her MS Environmental Science (EnviSci) degree, but to save the school's BS EnviSci program.

"None from my institution or my college has an MS or PhD in EnviSci. I want to finish this degree [or else] the program might be abolished," Sheila said. She is one among UP PSAE students who come from state universities and colleges, while the rest are from government agencies, local government units, and agricultural companies.

Allowing professionals to earn a postgraduate degree without disrupting their work is one of the reasons why UP PSAE was established.

"We offer the classes every weekend to cater to those who want to study but could not leave their job," said Dr. Filma Calalo, director of PSAE and a faculty member at the College of Agriculture and Food Science (CAFS). "Instead of going to Cebu, Metro Manila, or Los Baños, they

can go to PSAE, which is closer to their homes."

UP PSAE temporarily holds its classes at the Damosa Land, Inc. (DLI) complex while awaiting the construction of its permanent building on a 31,000 sqm land in Agriya, a mixed-use development project in Panabo City, Davao del Norte, almost 60 kilometers away from Davao City.

Ricardo Lagdameo, vice president of DLI, affirmed the importance of bringing UPLB education to Mindanao. "One major factor considered in the creation of UP PSAE was to enable Mindanaoan students to pursue further studies in agriculture without the need to leave their home region," he said.

DLI and its mother corporation, the Anflo Management and Investment Corporation (ANFLOCOR), play a big role in the creation of PSAE. ANFLOCOR donated the land and will finance and construct the soon-to-rise UP PSAE cluster of buildings in Agriya.

ANFLOCOR's other affiliate company, the Tagum Agricultural Development Company, Inc. (TADECO), was UPLB's





Photo courtesy of ANFLOCOR

## AN ARCHITECT'S PERSPECTIVE OF UP PSAE CAMPUS

partner in implementing the MS Entomology off-campus offering at the said company in 2013. This program is considered to be UP PSAE's forerunner.

The UPLB CAFS (then CA) and Graduate School (GS) initiated the off-campus offering, with team composed of Dr. Domingo Angeles, then CA dean; Dr. Cecilio Arboleda, former CA dean; Dr. Jose Camacho, Jr., dean of GS; and Dr. Calalo, in her then capacity as CA program development associate.

The ANFLOCOR group sought to partner with UPLB to put up UP PSAE to pursue its vision of a strong agricultural sector in Mindanao. "The partnership hopes to improve the quality of agriculture, agribusiness, and environmental studies, which will highly contribute to the improvement of the industry as well," Lagdameo said.

UP PSAE is now offering MS and PhD EnviSci. It seeks to continue the offering of MS Entomology, and introduce other agriculture and science programs, in the succeeding semesters. In the coming AY

2019-2020, UP PSAE will be offering MS Chemistry.

In the current set-up of PSAE, it is not only the students who travel miles. UPLB faculty members also do. They leave Los Baños on Friday nights to go to Manila to catch a flight for Davao.

Dr. Calalo said that they aim to complete a three-unit course every four weeks by holding classes from 8 AM to 5 PM on Saturdays and Sundays. Each student has four courses, equivalent to 12 units, every semester. "The faculty and students need to have a lot of patience because we have to ensure the quality of the course," she added.

Dr. Decibel Faustino-Eslava, dean of SESAM who co-teaches a course at UP PSAE, attested to this. "We handle courses at PSAE as how we handle them for our residential programs," she explained.

Dr. Patricia Ann Sanchez, also a faculty member at SESAM who co-teaches courses with faculty members from UPLB and UP Mindanao, said that UP PSAE's

collaboration with the latter is a big milestone for them.

Dr. Sanchez looks forward to handling students' theses and case studies, citing the fact that there are so many researchable areas in Mindanao that students can look into. She revealed that UP PSAE has a potential partnership with the Department of Science and Technology-Region XI for the conduct of students' theses.

Dr. Eslava is excited at the possibility of increasing the number of UPLB graduate programs in Mindanao. "There is a demand in the region and we are happy to be able to help in addressing it," she said.

Indeed, UPLB has the expertise to help address the region's needs. With each trip that Sheila takes to and from Davao, she can be sure that the UPLB program she enrolled in will equip her professionally with wisdom and knowledge to better serve her students, her university, her community, and the country.

# DUAL PhDs FOR AN EVER-GROWING UNIVERSITY

JOHN GLEN S. SAROL

UPLB's Aldo Lim has been given an opportunity that most people in the academe would not think twice about – to travel to the United Kingdom several times, return to the country after a few months, pursue research that is aligned to his interests, and study in two universities at the same time.

The reward? Two doctoral degrees – PhD Development Communication from UPLB and PhD World Development from the University of Reading (UoR) in the United Kingdom (UK).

Lim is one of the 21 Filipino graduate students who have been given the chance to pursue dual and joint degrees under the Transnational Education-Joint Development of Niche Programs (TNE-JDNP) of the Commission on Higher Education and the British Council that began in 2017.

Out of the universities involved in the program, UPLB was the first to give students full scholarship to study at their home university and at a partner UK institution.

For its pilot edition, selected UPLB and UP Diliman scholars like Lim were sent to UoR. The UPLB-UoR partnership aims to hone the scholars' expertise in agriculture, food security, and related sciences through the Dual PhD by Research.

Aside from Lim, who is an assistant professor at the College of Development Communication, three others from UPLB have received the TNE-JDNP scholarship.

They are Emmanuel Genesis Andal and Richard Daite, faculty members at the College of Economics and Management, who are working on their Dual PhD in Economics, and Guinevere Madlangbayan, researcher from the College of Public Affairs and Development, on her PhD Agricultural Economics.

They have started "shuttling" between Los Baños, Laguna, and Reading, England as

they take on learning opportunities in the two universities, with the ultimate goal of completing their dissertation, the major requirement to earn their Dual PhD by Research.

## INCREASING THE NUMBERS

The TNE-JDNP mechanism is a boost to UP's aim to increase its PhD holders

among its faculty members by up to 50% by 2025. As of 2019, only 307 out of 1,052 UPLB faculty members have a doctorate.

During the 2017 Harmonizing Academic Resources Planning Seminar-Workshop, UPLB's colleges presented their respective Faculty Development Program, which guides administrators to decide on who and when to send faculty members for



postgraduate studies. The faculty members are expected to finish their studies in three to four years.

Lim and his three contemporaries must satisfy three units of graduate seminar, 12 units of dissertation in UPLB, and attend at least 11 training events under the Reading Researcher Development Program at UoR, which is designed to enhance their research and professional skills.

"Since it is a PhD by Research program, we do not have set courses to take. However, in consultation with our supervisors, my peers and I have deemed it beneficial to attend specific modules relevant to our respective research topics," explained Lim.

Their schedule is flexible, too. As Lim said, "I spent the fall and spring terms of my first year at the University of Reading while cross-enrolled in a seminar course in UPLB. If all goes well, I will be back in Reading

during the spring and summer terms of my final year."

"The period in between will be for finalizing my research proposal and then implementing my research project in the Philippines. We are welcome to come back to Reading for short-term visits as well," Lim added.

After completing the program, the students are expected to publish an article in an international indexed journal.

### **A DUAL-PURPOSE PROGRAM**

Dr. Jose Camacho, Jr., dean of the Graduate School, which oversees the implementation of TNE-JDNP at UPLB, considers the program not just as another opportunity to achieve UPLB's vision to be a globally competitive graduate and research university, but also as an avenue for international and local collaborations.

"With this partnership, we are also able to enlist the support of the UK-based faculty members to become our visiting professors and therefore boost the internationalization program of the university," Dr. Camacho said.

"They can take part in presenting lectures, seminars, and workshops that may enhance or build faculty capacities toward the latest approach or methods in doing research. The collaboration may also lead to joint publications," he continued.

There are also plans to involve qualified personnel of UPLB's partner state universities and colleges and private academic institutions in the program.

"[They] will be admitted first as PhD by Research students in UPLB, and [later be] nominated to the dual PhD program," he said. "This is UPLB's contribution for human resource development and faculty development among our partners in academe."

Dr. Camacho said that this partnership in UK, which is expected to expand to three more universities, supports UPLB's agenda to respond to the challenges brought by the Fourth Industrial Revolution (FIRe).

Chancellor Fernando Sanchez, Jr., in his message during the 109th anniversary of UPLB on March 6, 2019, emphasized the need for a strong network among local and international universities in the context of FIRe.

"It is through this network that this unity of linkages, partnerships, and collaborations can really make an impact to address challenges that our society faces such as food security and climate change," Chancellor Sanchez said.

At the end of their TNE-JDNP academic journey, their earned dual doctorate will serve as the measure of success for Lim and his fellow UPLB scholars.

And beyond such personal achievements are the accompanying triumphs for the university that they will help build up one by one – partnerships that have expanded, knowledge that have diffused, and human resources that have become even stronger – qualities fit for a national university, one that is among Asia's best.





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Unlike traditional mechanical diagnostic instruments, biosensors use living organisms to learn more about the condition of another organism. Imagine monitoring the presence of a pathogen in a farm by observing the changes in the environment and the surrounding nonagricultural wildlife. It can be the condition of the birds or the reactions of certain microorganisms in the soil.

# EXPLORING THE FUTURE OF DIAGNOSTICS

JESSA JAEL S. ARANA

In the past, the science of diagnosis has been largely dominated by expensive equipment and protocols that require large amounts of resources and time. But with recent innovations, diagnosis has become faster, cheaper, and easier. Simply put, we just 'ask' other organisms.

Welcome to the age of biosensors.

Unlike traditional mechanical diagnostic instruments, biosensors use living organisms to learn more about the condition of another organism. Imagine monitoring the presence of a pathogen in a farm by observing the changes in the environment and the surrounding nonagricultural wildlife. It can be the condition of the birds or the reactions of certain microorganisms in the soil.

This is the new future of diagnostics that UPLB now hopes to explore through its new center, the Interdisciplinary Studies Center on Biosensors for One Health (IdSC-BOH).

IdSC-BOH is composed of representatives from different colleges and units and aims to develop the technology and protocols for biosensors in support of the One Health agenda.

"When you say One Health, this includes human health, animal health, and environmental health," said Dr. Eduardo B. Torres, dean of the College of Veterinary Medicine (CVM) and chairperson of IdSC-BOH. "Right now, there's a move to tap living things and biological materials by which we could evaluate these different components of One Health; and biosensors would be one."

Dr. Torres adds that aside from being less expensive and efficient, using

biosensors is also safer for the environment and for other organisms because it uses less hazardous materials. Its potential has been largely recognized such that it has become a subject of research in top universities.

To help UPLB establish its own research on biosensors, the center aims to link with other universities and to collate current researches. This would help level the ground for UPLB and gear its research on biosensors and One Health towards its own strengths in food security.

IdSC-BOH aims to monitor food and meat products "from farm to fork." Its strategy may include studying zoonotic, or infectious diseases that are transmitted between animals and humans, and food-borne diseases; looking into environmental degradation due to human activity; conducting consumer and population studies, researches in food production and processing, postharvest handling, animal breeding, product tracking; and eventually, producing policy recommendations for food safety protocols.

The center will also be focusing on developing devices that could measure the reactions of biosensors, which is why its co-chair is Dr. Arnold Elepaño, dean of the College of Engineering and Agro-Industrial Technology (CEAT).

The devices will be used to confirm diagnoses by measuring reactions such as binding together of biological matter or nanoparticles, changes in electrical currents, reaction to light, and many others.

Ruth M. Almario, development management officer at the Office of the Vice Chancellor for Research and Extension and secretariat-member of IdSC-BOH, said that since its constitution in August 2018, it has begun to successfully establish networks with experts in reputable institutions to train researchers in using biosensors.

One of the initial activities of IdSC-BOH was the Seminar on One Health and Biosensors held on Nov. 12, 2018 at OVCRE. In the said seminar, Dr. Jhalique Jane Fojas, a scientist at the University of Cambridge and a UPLB alumna, discussed the use of biosensors in the medical sciences.

Almario said that IdSC-BOH is also embarking on more collaborations that would enable graduate students to participate in international exchange programs and train in the study of biosensors.

With many opportunities ahead, the IdSC-BOH looks forward to developing One Health and biosensor research not only in UPLB, but also in the country.

Ten people would be a crowd inside the 21-sqm headquarters of the Interdisciplinary Studies Center (IDSC) for Water at the School of Environmental Science and Management (SESAM) building.

But despite its limited office space, the Water Center has mobilized people from UPLB, UP constituent universities (CUs), government offices, and civil society organizations to stand up and help in the efforts to ensure water security in the country.

The Water Center is tasked to pursue holistic inter- and transdisciplinary research, development, and extension programs toward secure water resources in the country. It is such a huge task for its four full-time staff, but its membership of almost 40 respected names in watershed, irrigation, environment, natural, and social sciences research in the university more than compensates.

Its interdisciplinary and borderless set-up, just like the other IDSCs in the university, is ideal according to its chair, Dr. Patricia Ann J. Sanchez, associate professor at SESAM, who holds expertise in water resources management and hydrological modelling, among others.

The Water Center, whose members come from different colleges, hit the ground running over a year into its creation by the Office of the Chancellor through Administrative Order 247 issued on October 24, 2017.

The Water Center has three flagship research and development projects. Dr. Sanchez leads two, namely: "Ridge-to-reef disaster risk and climate change impact assessment of floods and droughts in the agricultural sector of Angat Watershed, Philippines," her Balik-PhD Program; and "Hydro-geological assessment of Mt. Iraya watershed

in Basco, Batanes" funded by the Forest Foundation Philippines.

The third, "Assessing the resurgent irrigation development program in the Philippines," funded by the Philippine Institute for Development Studies, is led by Dr. Agnes Rola, professor emeritus at the College of Public Affairs and Development.

Although the Water Center is new, water has been a long-time research subject matter of UPLB, thus, it aims to build a database of UPLB's water researches in order to use as a reference in pursuing strategic activities.

Dr. Sanchez said that they are also consolidating the research of other UP campuses in order to come up with an umbrella for everybody's work.

The center referenced earlier researches to come up with the following thematic areas: water-related disasters, watershed



# WAVING THE FLAG FOR WATER SECURITY

MARK JAYSON E. GLORIA

management, water security in agriculture, urban and rural water, clean water and sanitation, water-related technologies, water governance, water resources assessment and database management, economic valuation and pricing of water resources, and gender, culture, and community.

The center also aims to consolidate data about experts who may be tapped to conceptualize proposals and implement projects.

“This is the university opening up its doors to formally collaborate with others through the Water Center,” Dr. Sanchez said.

The center is also organizing water researchers in UP through its networking and partnership activities conducted by a committee that Dr. Rola leads. In June and September 2018, it gathered representatives from UP CUs to converse

on their water-related researches and to plan their work on the program, “Water security for all, at all times.”

Meanwhile, the capacity building committee, chaired by Dr. Virgilio Villancio of the Agricultural Systems Institute, held two mini forums in August and November 2018. These learning events brought various stakeholders to the university to talk about watershed management in Sierra Madre and water sanitation and hygiene (WASH) in the country, respectively.

These, and the next series of forums, shall contribute to the First National Water Conference that the center will hold in November 2019.

“The stakeholders in the mini forums will become participants and presenters [in the national conference]. It aims to have stronger collaboration between academe

and other stakeholders like local government units, non-government organizations, and peoples’ organizations. It’s a way for CUs to showcase what they are doing in relation to water,” Dr. Sanchez said.

Recently, the Water Center took part in the National Water Summit spearheaded by the country’s National Water Resources Board as the culmination of the past pre-summits held in Luzon, Visayas, and Mindanao. The Water Center extended its technical expertise in the national summit that aims to influence policy direction on water security.

With three researches, two fora, and two networking meetings within only a year, there is no denying that the Water Center is gearing up for more work.

Limitations notwithstanding, the center makes an unequivocal commitment to wave the flag for a resource that should be conserved before it is too late.

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The Water Center is tasked to pursue holistic inter- and transdisciplinary research, development, and extension programs towards secure water resources in the country.

Photo by Christopher V. Labe

# A STEP TOWARD REDUCING ENVIRONMENTAL FOOTPRINT

JOHN GLEN S. SAROL

As we make strides in innovation through the years, climate change and other threats to the environment loom even closer.

This is why UPLB researchers are taking a closer look at the environmental footprint of a product in its lifecycle—from production to disposal—to reveal how its impact on the environment can be reduced.

Environmental footprint is defined by the University of Cambridge Dictionary as the effects of human activity on the environment.

With the intent of creating a niche for itself in this research area, UPLB recently established the Interdisciplinary Life Cycle Assessment Laboratory (ILCAL).

A brainchild of Dr. Rex B. Demafelis, vice chancellor for research and extension, ILCAL focuses on studying the environmental footprint of products using the Life Cycle Assessment (LCA) method.

“Knowing the environmental footprint of a commodity can inform government and private institutions about solutions to lessen their harmful contribution to the environment. It also helps us inform the public about environment-friendly products available in the market,” said Dr. Demafelis, who also chairs ILCAL.

Currently, ILCAL is facilitating several LCA projects on agricultural water allocation and management, abaca fiber, biodiesel from coconut oil, bioethanol, and swine production.

ILCAL researcher, Engr. Bernadette Magadia, explained that the LCA method examines all the environmental inputs and outputs of a product: “We analyze the entire supply chain [of a product] for possible harmful environmental effects, such as greenhouse gas emissions. Once the analysis is done, we interpret the data and then look for implications [on the environment].”

The concept of LCA is still new in the Philippines but it has slowly gained traction

in national agencies like the Department of Agriculture-Bureau of Agricultural Research, Department of Science and Technology, and the Department of Energy.

“Sustainability is our priority, so once ILCAL’s projects are completed, we will engage policymakers and the government,” said Engr. Magadia.

“We want to be recognized as the national center of LCA that agencies assigned to craft and direct policies related to environmental footprints can always rely on,” Dr. Demafelis added.

Dr. Demafelis envisions ILCAL as a centralized analytical laboratory that connects and supports other centers for interdisciplinary studies. He also plans to establish a library where researchers could access LCA findings and results.

ILCAL has also established partnerships with local and international institutions, including the Water Footprint Network, a Netherlands-based global platform for collaboration to solve the world’s water crises by advancing fair and smart water use.

ILCAL is still in its infancy stage and Dr. Demafelis acknowledges that it still has not reached its full potential. This gives the center excitement about what it can contribute toward creating eco-friendly products and policies.

As ILCAL moves forward with its partners and stakeholders, it is committed to continue what it started—chart a path to reduce humanity’s environmental footprint.







Photo by Vardolph R. Maningas

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Knowing the environmental footprint of a commodity can inform government and private institutions about solutions to lessen their harmful contribution to the environment. It also helps us inform the public about environment-friendly products available in the market.

- DR. REX DEMA FELIS

# FOSTERING INNOVATION IN THE UNIVERSITY

ALBERT GEOFFRED B. PERALTA

University researchers aspire to produce a method, process, or invention that could make a difference in people's lives.

Too often, however, their attempts to take discoveries out of the lab and into the market are met with failure due to inexperience and lack of funding.

In a bid to address this concern, UP instituted the Invention Disclosure Incentive (IDI) in 2015 to assist inventors in patenting their products. Since then, UPLB has consistently led in being awarded the IDI, as well as in filing patents. In 2018, the following products recipient came from UPLB.

"Coolant" is a rice hull nanofluid whose enhanced thermophysical properties make it a cheap alternative to cool down heat exchangers.

"Meat Detection Kit" uses DNA-based method to identify and authenticate meat and meat products, making it an important tool for food safety and security.

"Nanosilica Beads," which uses iron-modified nanosilica powder and aerogel beads as a means to purify water that is contaminated with arsenic to ensure water safety and for ecological repair.

"Nanobiosensor," a DNA-based technology that allows the detection of *Listeria monocytogenes*, *E. coli*, and other contaminants in food, feed, and water, to ensure food safety.

"Probiotic Guava Tea," a fermented drink from guava leaves that has been infused with probiotics or "good" bacteria. It is reported to have anti-diarrheal, anti-diabetic, anti-microbial, and anti-cancer properties.

"Animal Probiotics," a low-cost product for use in the swine, poultry, and aquaculture industries to enhance animal responses to disease.

"Recombinant Thermo-acidstable Endoglucanase" improves the hydrolytic

process, the release of glucose sugars for use in bioethanol production.

"Monascus Red Colorant" is a natural and safe colorant for cosmetics, food, and beverage extracted from the fungi *Monascus Purpureus* M1018.

"Fertigroe Nanofertilizer," as a controlled-release nitrogen fertilizer, lessens fertilizer use and increases crop yield for sugarcane, coffee, and corn.

"HormoGroe" is a nano-encapsulated plant growth regulator for high value crops capable of enhancing shoot and root development, and inducing seed germination and flowering.

"Nutrio" is a naturally derived foliar fertilizer for eggplant and sugarcane. It is capable of significantly increasing sugar yield from cane stalks and reducing soil damage due to chemical fertilizers.

Inventions and processes that have been disclosed under the IDI are allocated a monetary reward in two tranches: the first given upon disclosure and the second tranche, once the patent has been filed at the Intellectual Property Office.

Having been awarded the IDI, what is next for these inventions? According to Director Glenn Baticados of the UPLB Technology Transfer and Business Development Office (TTBDO), they will go through the patent filing process, followed by a rigorous phase of due diligence such as market studies and technology evaluation.

TTBDO will then enter them into a program that provides incubation support to agricultural start-up companies and training in business development and entrepreneurship; and will conduct industry matching to find compatible private companies who may be interested in further developing the inventions.

With these innovations, UPLB strengthens its position as a research university while providing its stakeholders with these life-changing inventions and processes.



# THE PRODUCTS AND THEIR INVENTORS

## **Coolant**

Engr. Ma. Cristine Concepcion D. Ignacio, MSc, CEAT

## **Meat Detection Kit**

Joy B. Banayo, MSc, Kathlyn Louise V. Manese, Medino Gedeun N. Yebron Jr., MSc, and Antonio C. Laurena, PhD, CAFS

## **Nanosilica Beads**

Milagros M. Peralta, PhD, and Maritess L. Magalona, MSc, CAS

## **Nanobiosensor**

Francisco B. Elegado, PhD, Evangeline C. Alocilja, PhD, Lilia M. Fernando, PhD, Maria Teresa M. Perez, MSc, Lorele C. Trinidad, PhD, Shara Mae T. Colegio, Susana M. Mercado, PhD, and Margarita A. Mercado, MSc, BIOTECH

## **Probiotic Guava Tea**

Jennifer D. Saguibo, MSc, Francisco B. Elegado, PhD, Margarita A. Mercado, MSc, Marilou R. Calapardo, MSc, and Ma. Teresa M. Perez, MSc, BIOTECH

## **Animal Probiotics**

Laura J. Pham, PhD, and Chay B. Pham, PhD, BIOTECH

## **Recombinant Thermo-acidstable Endoglucanase**

Richard D. Tambalo, PhD, Asuncion K. Raymundo, PhD, and Amy M. Grunden, PhD, BIOTECH

## **Monascus Red Colorant**

Fides Marciana Z. Tambalo, MSc, Jayson F. Garcia, Cyrene D. Estrellana, Exiquel R. Aranda, Manolito E. Bambase Jr., PhD, Erlinda I. Dizon, PhD, and Ronilo P. Violanta, PhD, BIOTECH

## **Fertigroe Nanofertilizer**

Lilia M. Fernando, PhD, Oliver B. Salangad, Engr. Ida Allen P. Lopez, Erlinda S. Paterno, PhD, and Florinia E. Merca, PhD, BIOTECH

## **Hormogroee**

Lilia M. Fernando, PhD, Erlinda S. Paterno, PhD, Herald Nygel F. Bautista, Juan Miguel K. Parami, Florinia E. Merca, PhD, and Teofila dC. Villar, PhD, BIOTECH

## **Nutrio**

Virginia M. Padilla, PhD, BIOTECH

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