ATTIVE Filipino Innovators in the Spotlight















About

"ATIN: Filipino Innovators in the Spotlight" celebrates the remarkable achievements of Filipino scientists with pride and reverence.

This coffee table book showcases the journeys of these trailblazers, highlighting their contributions and the significant impact they have made in their respective fields.

Through captivating stories and stunning visuals, "ATIN" honors their dedication, innovation, and the sense of national pride their accomplishments inspire.

This book offers a heartfelt tribute to the scientists who have elevated the standards of excellence and brought recognition to the Philippines.

ATIN: Filipino Innovators in the Spotlight

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Charting the Path of a Filipina Climate Scientist

by: Khasian Eunice M. Romulo, DOST-STII

In the vast tapestry of global climate research, Dr. Cruz was one of the 234 authors from 64 countries who worked on the Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

In photo: Dr. Faye Abegail T. Cruz

Specialization: Climate Science

Current Affiliation: Regional Climate Systems

Laboratory, Manila

Observatory

Photos courtesy of: Dr. Faye Abegail T. Cruz

Jeffrey T. Centeno



Discovering Climate Science

Dr. Cruz's early research involved the use of regional climate and weather models. These sophisticated tools are pivotal in unraveling the complex interactions between changes in the land surface, such as deforestation and urbanization, and the atmosphere, offering crucial insights into how the land surface influences temperature and rainfall patterns.

In the past decade with the Manila Observatory, Dr. Cruz has focused on efforts toward localizing climate data through a process known as climate downscaling.

Regional climate models are used to generate localized information from global climate projections, which often lack the spatial resolution necessary to capture the nuances of an archipelago like the Philippines.

This technique allows researchers to obtain detailed, granular data on how the changing climate, such as temperature and rainfall variations, manifest across varied landscapes.

This was also the focus of her postdoctoral research at the Meteorological Research Institute, Japan as an International Research Fellow of the Japan Society for the Promotion of Science.

Dr. Cruz emphasizes that localized climate information is crucial for effective planning and adaptation strategies in regions with complex geographical features.

Understanding Climate Change

Climate change is an urgent issue of our time. It is important to have robust science to inform effective climate action.

The study of climate involves examining each component of the climate system, including the land surface, atmosphere, hydrosphere, cryosphere, and biosphere as well as the influence of human activities, and Dr. Cruz highlights the complex interactions across these components.

Climate differs from place to place so it is important to also examine regional features, apart from the globalscale.

It is also like traveling in time, when looking back at past climate trends and changes, and looking at future scenarios by analyzing climate projections.

Winning Moments

In the vast tapestry of global climate research, Dr. Cruz was one of the 234 authors from 64 countries who worked on the Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

The report aimed to present the current state of the science of climate change, and the imperative for decisive responses.

During the global pandemic, Dr. Cruz navigated the challenges of remote collaboration across different time zones.

It was a demanding yet fulfilling endeavor that required the meticulous review and rigorous assessment of numerous scientific papers for the report, including addressing all comments from reviewers.

The report gives a clear and strong message on the human influence on climate change. The findings presented more intense changes in climate extremes—heatwaves, torrential rainfall etc—with every additional warming in the future.



Dr. Cruz underscores the critical need for immediate and sustained action, and emphasized that "reducing emissions is essential to limiting warming and its dangerous impacts, and securing a sustainable future."

Life Outside the Laboratory

Balancing work and personal life is crucial, and Dr. Cruz navigates this with a blend of passion and purpose. Her dedication as a climate scientist stems from how she enjoys her daily work.

Beyond the office, Dr. Cruz enjoys exploring new destinations and immersing herself in diverse cultures.

On the other hand, it is also part of her work, collaborating locally and internationally on climate research, understanding different perspectives, and forging connections across disciplines. For her, every collaboration adds depth to her understanding of the

global climate challenge—a challenge she tackles with curiosity, empathy, and unwavering dedication.

Professional Memberships

Dr. Cruz is currently Co-Chair of the Coordinated Regional Climate Downscaling Experiment or CORDEX Southeast Asia, a consortium of climate scientists united by a common purpose and shared challenges.

Together, they harness their expertise in regional climate research to understand the intricacies of climate dynamics specific to Southeast Asia.

Driven by their shared passion, they embark on their third collaborative endeavor—the Climatic hazard Assessment to enhance Resilience against climate Extremes for Southeast Asian megacities (CARE for SEA megacities) project.



Funded by the Asia-Pacific Network for Global Change Research (APN), the project aims to refine climate projections down to the city level, for the major cities of Hanoi, Metro Manila, Bangkok, Jakarta, and Kuala Lumpur. She is also a member of the Asia-Pacific Scientific and Technical Advisory Group of the UN Office for Disaster Risk Reduction.

What does a day in the life of a climate scientist look like?

Much of Dr. Cruz's day revolves around online and in-person meetings, discussions and email correspondence. Coordination with her project teams and frequent meetings with partners underscore the collaborative spirit of her work.

In her laboratory at the Manila Observatory, weekly research meetings allow team members to share progress, exchange insights, and collectively learn from each other's endeavors.

Bi-weekly journal meetings further enrich collaborative offering this environment. opportunities to discuss, and disseminate knowledge gained from readings. recent

Encouraging the Youth to Take Science

Science is a fascinating yet demanding endeavor, offering a profound sense of fulfillment. Research has progressed with data and information becoming more accessible through the internet and with technological advancements. Dr. Cruz emphasized that it is crucial to develop critical thinking skills to discern valuable information and produce meaningful knowledge.

"In the Philippines, engaging in impactful scientific work is entirely possible. Learning to collaborate and form partnerships are essential. By working together, we can tackle pressing issues and be prepared for whatever climate impacts we will face in the future."











Lief Erikson D. Gamalo: Finding Purpose in the Wild

by: Louella L. Pestaño, DOST-STII

Captivated by the beauty of nature, a childhood dream turned into a reality as Lief Erikson D. Gamalo, a promising wildlife biologist and inspiring educator, enters the life adventure of capturing the unspoken wonders of Philippine fauna.

In photo: Lief Erikson D. Gamalo

Specialization: Zoology and

Wildlife Biology

Current Affiliation: University of the Philippines -

Mindanao

Photos courtesy of: Lief Erikson D. Gamalo

Jeffrey T. Centeno



Bata pa lang ako, alam ko nang wildlife or anything about nature ang pangarap kong propesyon. Mahilig akong mag-explore sa Balangiga, Eastern Samar kung saan ako pinanganak at lumaki. Sa bakuran namin ino-observe ko mga insekto at iba't ibang uri ng hayop, namamangha ako how beautiful the nature is."

This curiosity grew bigger so when I started studying, alam ko na gusto ko gawin sa future, so I did everything to make it happen," underscored Gamalo as he recollects how his journey to becoming a wildlife biologist emerged.

Beyond his research and academic journey, Gamalo is also an enthusiast for wildlife photography, capturing the natural beauty of Mindanaoan fauna.

Immersing into the Life of Primates

In 2021, Gamalo and his team led the groundbreaking project called Program HUMAIN (Human-Macaque Interface) funded by the Department of Science and Technology-National Research Council of the Philippines (DOST-NRCP), where they studied the behavior, habitat, activity budget, and range of the Philippine long-tailed Macaque in the wild. This expedition lasted for a month from six in the morning until six in the evening.

In his experience, Gamalo shared that Macaque's troop leaders can be easily identified by their physique, prominence of wounds, and aggressiveness. On the other hand, female Macaques, which are distinguishable morphologically by the presence of whiskers, exude maternal instinct by taking care of their young offspring.

In retrospect, his team also determined the human perception of monkeys.

Interestingly, after a long time of observing monkey troops, Gamalo and his team were able to recognize one monkey from another, interpret gestures of emotions and moods, and become aware when species feel threatened by humans.

While the Philippine long-tail Macaque is the only domestic species found in Palawan, Davao, and other parts of the country, Gamalo added that these monkeys can adapt easily to their environment–forest or coastline.

Importantly, their work developed recommendations and policies on handling Philippine long-tail Macaques for establishments such as resorts in Mindanao commonly visited by the species.

Gamalo underscored that the recommendation will raise awareness of the significant effect of human interaction on the behavior of monkeys; and help hotel management to improve tourism practices.

But what makes the Philippine long-tailed Macaque the primary subject of his expertise? In high school, Gamalo wondered if chimpanzees or gorillas were thriving in the Philippines but later found out that only the Philippine long-tailed Macaque is endemic.

"Noong nagkaroon ako ng opportunity para sa isang project collaboration, kadalasan ng nakikita kong literature related sa Philippine long-tailed Macaque is more on biomedical research na ginagamit sila as subject, konti or bihira lang pagdating sa wildlife ecology and conservation," added Gamalo.

By realizing that there are still unexplored areas for scientific research, Gamalo has perfectly found his niche in the scientific community.





Traversing the Trail of Wildlife

Still part of the lush nature, Gamalo shared that his undergraduate studies involved identifying invertebrates thriving in local pitcher plants (Nepenthes sp.) and discerning what.

Gamalo earned his Bachelor's degree in Biology, Cum Laude, at Leyte Normal University in Tacloban City, Leyte. Later, he pursued his Master's Degree in Zoology at the University of Los Baños (UPLB) under the Department of Science and Technology - ASTHRDP Scholarship.

Also in 2018, he was an Attached Student at Universiti Malaysia Sarawak in Kota Samarahan, Sarawak, Malaysia. He emphasized that his passion for wildlife conservation was amplified during his stint in UPLB where he attended numerous conferences, field research, and expeditions.

After years of specializing in research and academia, Gamalo has received several prestigious recognitions from local and international award-giving institutions.

Some of these accolades include the Gawad Chancellor Award Pinakamahusay na Guro (Best Junior Faculty) 2023 Junior Faculty of the University of the Philippines-Mindanao, ONE UP Faculty Grant 2022-2024 for research and public service in zoology and wildlife studies, Young Researcher Award, and Outstanding Graduate Student Award. For his professional career as an educator, Gamalo is an Assistant Professor at the University of the Philippines - Mindanao teaching Zoology-related courses and Wildlife Ecology and Conservation. He is affiliated with local and international institutions like the DOST-NRCP and the International Union for Conservation of Nature.

Built by Strong Support and Passion for Life

A proud Waray, Gamalo shared that being surrounded by an encouraging family strengthens his desire to pursue his dream of becoming a wildlife biologist.

"Typhoon Yolanda noon, naubos yung meron kami. Pero sobrang supportive ng family ko sa path na gusto kong tahakin kaya nag-pursue ako sa Biology and lahat ng success ko sa aking career ay dahil sa paniniwala at suporta nila sa akin," said Gamalo.

Moreover, Gamalo added that his mentors from the undergraduate and graduate programs beefed up his interest by exposing him to research expeditions that significantly honed his skills and research techniques.

Likewise, he expressed his sincerest gratitude to the Department of Science and Technology (DOST), which played a pivotal role in providing financial support for his graduate studies, local and international research conferences, and high-impact research projects.



On a personal note, he shared that being a scientist is physically and emotionally challenging, especially for those who need to undergo week- or month-long research fieldwork-being away from home.

Nonetheless, all becomes clear after the study is realized and acknowledged by the scientific and local communities. Further, being a university professor allows him to mentor students and inspire them to become future wildlife biologists.

Gamalo said it fulfills his goal as an educator, as well as to other wildlife biologists, engaging many students to see the relevance of their work and later on follow the path they have created. "Gusto kong makita at ma-appreciate ng future generations ang wildlife na nakikita ko ngayon at dahil may ibang bansa na may long-tailed Macaques, mas lumalakas yung call to action para sa scientific community na iparating ito sa ating stakeholders—sa communities—na mas nangangailangan ng information na ito," said Gamalo.

The crusade for wildlife ecology and conservation is a long-haul commitment yet, Lief Erikson D. Gamalo is a testament of optimism that the world is still and will be a better place for future generations if people will answer the call of nature and take proactive steps towards wildlife biodiversity and conservation.







From Humble Roots to Mathematical Peaks: The Savant from Batangas Decoding the Future

by: Ma. Giselle M. Geraldino, DOST-STII

Dr. Renier Mendoza's inspiring journey might make you change your mind. From a palakol elementary student to a remarkable young researcher in the Philippines, Dr. Mendoza was inspired to challenge the heights to provide solutions.

In photo: Dr. Renier Mendoza

Specialization: Math, Applied Math,

and Data Science

Current Affiliation: University of the

Philippines - Diliman

Photos courtesy of: Dr. Renier Mendoza

Khasian Eunice M. Romulo

hink of the most intimidating subject during your school days. If mathematics was included in the top answers that come to mind, Dr. Renier Mendoza's inspiring journey might make you change your mind.

From a palakol elementary student to a remarkable young researcher in the Philippines, Dr. Mendoza was inspired to challenge the heights to provide solutions.

For him, a nation with a great deal of problems is not a lost cause; it is an opportunity for solvers like him to marvel at the mathematical equations that may lead us to the best outcome.

Dr. Renier Mendoza is an Associate Professor at the Institute of Mathematics, Program Director of the Computational Science Research Center (CSRC), and Coordinator of the College of Science PhD Data Science Graduate Program at UP Diliman. His research interests revolve around Math, Applied Math, and Data Science.

The saga of "palakol" grades, scholarships, and scientific papers

Getting bad grades is the easiest way to get a negative reaction from our parents. When Dr. Mendoza got three 70's on his report card, his mother became furious but this got him ignited to study more seriously in the next school years.

Simultaneously, he began to enjoy mathematics as a subject. Since public schools don't have math enrichment programs, his idea of a good school vacation was to borrow math books from his friends from private schools and spend his school break solving math problems.

The young Renier became an honor student the next year after his palakol grades and ultimately became a valedictorian in his high school graduation.

This came as a surprise to him especially since national

high schools are large in population as the small public elementary schools converge in national high schools after they graduate.

The fulfillment in solving mathematical problems led him to dream about becoming a public school math teacher at Talahiban Elementary School and Buhay na Sapa National High School in San Juan, Batangas.

"Ang nag-drive talaga sakin ay ang passion ko for math. Nag-eenjoy ako mag-solve ng problems. Kapag may problem, tapos may way ako para masolve sya in the quickest way possible and through iba-ibang approach, nafe-feel ko yung fulfillment," said Dr. Mendoza as to what drove him to pursue BS Mathematics in UP Diliman.

After graduating, he became an instructor at UP Diliman, which allowed him to take MS Applied Mathematics at the same university.

His next academic chapter began when he was offered a scholarship at Karl-Franzens University of Graz in Austria to take his PhD in Mathematics. After finishing his PhD, Dr. Mendoza went back to teach at UP Diliman. He then took his postdoctoral fellowship at Konkuk University, in South Korea until 2022.

In recent years, many of his projects have focused on using mathematics to develop biological models for healthcare research, particularly during and after the zenith of the COVID-19 outbreak and other diseases with limited studies.

Through modeling, their team generated useful predictions from pre-existing data while considering wide arrays of factors that can affect certain events. In this way, the leaders, healthcare workers, and other authorities involved may be better equipped to face the predicted scenarios. Moreover, these studies could also help lawmakers in defining the best implementation strategies to streamline existing programs or to craft improved policies.

Additionally, since there is an extensive application of math in the field of research, he was also involved in projects with methods of modeling tsunami wave propagation, numerical optimization, numerical continuation, optical character recognition (OCR) system, and genetic algorithm.



The Filipino solver of today's generation

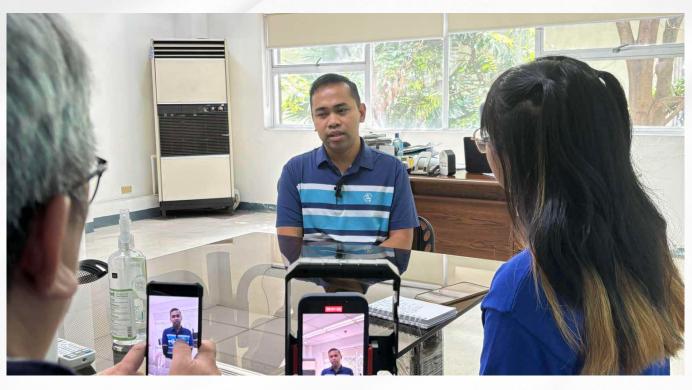
His countless awards have proven his competence in this field throughout the years. In 2024, he was awarded the Outstanding Young Scientist by the National Academy of Science and Technology (NAST). He was also the Grand Prize Winner of the NAST Talent Search for Young Scientists in 2021. These were just a few of his scientific awards, while more distinctions are given to him as an educator.

With his talent and dedication, he was encouraged by his seniors and mentors to stay and continue his career outside of the Philippines. However, Dr. Mendoza felt a sense of responsibility to serve his fellow Filipinos as he was well aware of how our country lacks scientists since many Filipino PhD holders continue their careers abroad.

For Dr. Mendoza, the Philippines is worth returning to since, as a solver, there would be a lot of research opportunities in our country, which has a lot of problems that need to be addressed.

"Coming back to the Philippines is definitely worth it. ... As I said, gusto ko ng problem-solving. Ang Philippines ang may napakaraming problems and kulang tayo ng solvers," Dr. Mendoza explained.

Dr. Mendoza said that by being in the university, he gets to become a solver of the country while also training the next generation of solvers who would help address our problems. By committing his time and effort to shaping the future solvers of the next generation, his return becomes worthwhile.



His remarkable zeal helped him become a great mentor, leader, and solver scientist of our generation.

The best things about what he does

As a professor, one of his greatest joys was being a mentor. His students make him proud when he sees that they are learning and growing as researchers.

It brings him fulfillment whenever he gets to train them to do their research, defend their theses, and help them solve problems. His passion for teaching started at a very young age, and even today, he is living his dream of being a professor.

On the other hand, as a scientist, one of his favorite projects as a researcher was his project with his student, which won the Outstanding Scientific Paper Award in NAST about the optical character recognition of baybayin. This project was an application that can translate baybayin into text

Since not all Filipinos are adept at reading baybayin, this application can help them read baybayin characters printed on tattoos, cultural designs, and cultural books, among many other materials.

Dr. Mendoza explained that he was fond of the baybayin due to its fluidity (maalon or wave-like script) which highly demonstrates its Filipino roots. On a more personal note, the young Renier used baybayin in writing his journal to serve as encryption when he was still in Batangas, living with his four siblings in the same bedroom.



Even at the conferences, their son was always present. However, Dr. Mendoza still makes sure to secure a bonding time by planning personal trips with his family to ensure boundaries between his career and personal life.

To maintain a healthy physique, Dr. Mendoza also commits his extra time to doing some of his physical hobbies including hiking, running, and playing badminton and ping pong.

Currently, their time outside work revolves more around what activities could they do with their son to spend quality time. Although they were more active in hiking when their toddler was not around yet, they have also tried hiking with their son in South Korea.

As a good family man

Dr. Mendoza's wife was also a professor in the Institute of Math in UP Diliman. Aside from that, they sometimes work on the same projects.

This setup poses a bit of a challenge to separate work from their conversations at home. Nevertheless, they make sure that whenever they talk about work, it is something that they both want to talk about and not just because they need to talk about it as co-workers.

Besides being a husband, Dr. Mendoza is also a father of a toddler who has become their source of joy. When he and his wife went to South Korea for their post-doctorate fellowship, they brought their son with them.





His vision as a father and as a mentor

"Syempre gusto din namin na maging scientist din sya," exclaimed Dr. Mendoza when asked if he would encourage his son to become a scientist like them. This wish still stems from the realization that our country is in dire need of scientists. However, Dr. Mendoza said that they would still support him in anything that he wants to pursue in the future.

To the youth who want to pursue math, Dr. Mendoza says that it is okay not to be someone who is "quick in doing math". What's more important in pursuing a career in math is to become someone who knows how to solve — someone with critical thinking.

The BS Mathematics program at UP Diliman focuses more on proving and

"Maraming careers sa BS Math," Dr. Mendoza sends his encouragement to the students taking Mathematics as their undergraduate program. Aside from a career in the academe, there are also rich choices of career path that also pays well such as in the fields of actuarial science, insurance, data science, management, and finance.

solving since they are training the

students to become better solvers.

He specified that actuarial scientists had the most lucrative career path among degree holders of BS Math. This career offers competitive salaries as actuarial scientists were the ones tasked to think about where to put investments in insurance companies.

Advice to the future generation

Data science was also a good choice for people who prefer dealing with numbers, data sets, and projecting models and predictions. Another path that Math graduates could explore is operations research that could apply to scheduling, finance, and government processes.

"Minsan, may mga science lang na feeling mo mahirap. Pero after some time, kapag paulit-ulit mo na ginagawa, mage-gets mo rin sila." This is what Dr. Mendoza said to students who were pursuing the field of science. He also wanted to debunk the idea that math and science are difficult subjects. Some students fail to try their best just because they already have a preconceived notion that STEM is difficult.

"Pursue science dahil kailangan ng Pilipinas ang scientists, ang solvers. ... Kung may times na mahirap, okay lang mahirapan." Dr. Mendoza's message is especially meant for those who may think that they made a wrong decision in pursuing science. Science is a vast ocean to explore hence, Dr. Mendoza advises students to try and catch a science that they are passionate about.

"Kailangan talaga mag-persevere. ... Kailangan passion mo sya, kailangan you put your heart and everything into it. Kasi kung gusto mo yung ginagawa mo, madaling magfo-follow through na yung iba," as Dr. Mendoza advises to the future solvers of our country.



Dr. Likha Minimo's Resiliency Journey:

From Passion to Purpose

by: Khasian Eunice M. Romulo, DOST-STII

A geologist who studies the Earth, including phenomena such as eruptions, earthquakes, ground movements, and the several types of soil and rock. Her work focuses on understanding their origins, formation, and implications for human settlements—such as identifying areas prone to flooding or seismic activity.

In photo: Dr. Likha Minimo

Specialization: Geology and

Disaster Risk & Resilience

Current Affiliation: University of the Philippines

Resilience Institute

Photos courtesy of: Dr. Likha Minimo

Louella L. Pestaño



A name rooted in family tradition

r. Likha Minimo comes from a family with a deep sense of nationalism, reflected in their tradition of giving Filipino names. Her parents, who were activists, continued this tradition in their generation, naming their children with meaningful Filipino names. Dr. Minimo's sister, Kalayaan Marikit, carries a name that embodies freedom and beauty, while her own name, Likha, signifies creativity and innovation.

Interestingly, her name was chosen to be shorter after her sister's playful complaint about the length of her own name. Adding to the significance, Dr. Likha Minimo was born on Earth Day, a detail that resonates with her connection to activism and environmental consciousness.

Early aspirations and passion for Earth Science

Dr. Minimo initially dreamt of becoming an artist, with a strong interest in geography as well. However, knowing that she needed support for her education, she applied for the DOST scholarship. Geography was not covered by the scholarship then, so she took up Geology. She did not qualify for the scholarship but her passion for earth science was evident from a young age, excelling in the subject since grade school.

Her journey in Earth Science began as early as grade 5 when she participated in quiz bees in her municipality of Rosario, Batangas. She continued to compete in these academic challenges throughout high school, eventually reaching the regional level in earth science quiz bees. These experiences solidified her deep interest in geology.

A significant moment in her early life was the 1990 Baguio earthquake, which occurred when she was just three months old. Her parents had intended to settle in Baguio, but the earthquake forced them to relocate to La Union, then to Manila and finally to Batangas. This event subtly shaped her connection to geography and natural phenomena.

Shaping a career in disaster reduction and resilience

Dr. Minimo completed her Bachelor's and Master's degrees in Geology at the University of the Philippines Diliman. Her academic journey was influenced by her initial avoidance of mathematics-heavy courses, which led her to steer clear of engineering programs. She found enjoyment and fulfillment in her Geology courses, particularly Geol 11: Principles of Geology.

During her first year in college, she experienced two significant typhoons-Milenyo in 2006 and Ondoy in 2009-which caused floods, thus extending the academic calendar. This period exposed her to the proactive efforts of the National Institute of Geological Sciences (NIGS) of the University of the Philippines Diliman in responding to floods and natural disasters. Witnessing the importance of mapping flood-prone areas and improving hazard maps, she realized the need for more than just reactive measures.

Her passion for disaster reduction and resilience deepened during her master's studies. Major events like Typhoon Sendong and the devastating earthquake in Japan further influenced her career path. Dr. Minimo closely followed these events through her mentor, Dr. Mahar Lagmay, and was deeply affected by the thought of similar disasters occurring in the Philippines. This led her to focus on disaster reduction and resilience, putting her initial interest in volcanology on hold.





Evaluating DRRM Systems in Mindanao

Dr. Minimo's dissertation entitled Spatiotemporal Analysis of the Interaction of Decentralization, Development and Disaster Cascades in Mindanao, Philippines, focuses on the effectiveness of the implementation of Disaster Risk Reduction and Management (DRRM) systems in the Mindanao region since the enactment of the DRRM law in 2010.

Mindanao has faced various disasters during the early years of the law's implementation, including typhoons, earthquakes, and droughts. By examining these events, the study aims to assess how the law has been applied, the challenges encountered by DRRM officials, and the impact of political priorities and developmental obstacles on disaster management efforts.

While researchers are familiar with the current conditions and responses to disasters, the study takes a historical approach by simulating past events that have yet to test the system in its present form. For instance, Mindanao has not experienced a volcanic eruption or a significant tsunami since the law's implementation.

By simulating major hazards like the Moro Gulf Earthquake's largest tsunami and the 1997-1998 El Niño event, which was one of the worst in Mindanao, the study explores potential challenges that local government units (LGUs) may face under the new decentralized system.

Under the current framework, mayors and governors have shifted responsibility for disaster response, a significant change from previous centralized structures. This research identified possible issues that LGUs may encounter in managing large-scale disasters and to provide insights for improving DRRM strategies in the future.

A Landmark Contribution to Disaster Management

One of Dr. Likha Minimo's most memorable and proudest projects is her PhD thesis. While the articles derived from it are yet to be published, the thesis has already made a significant impact.

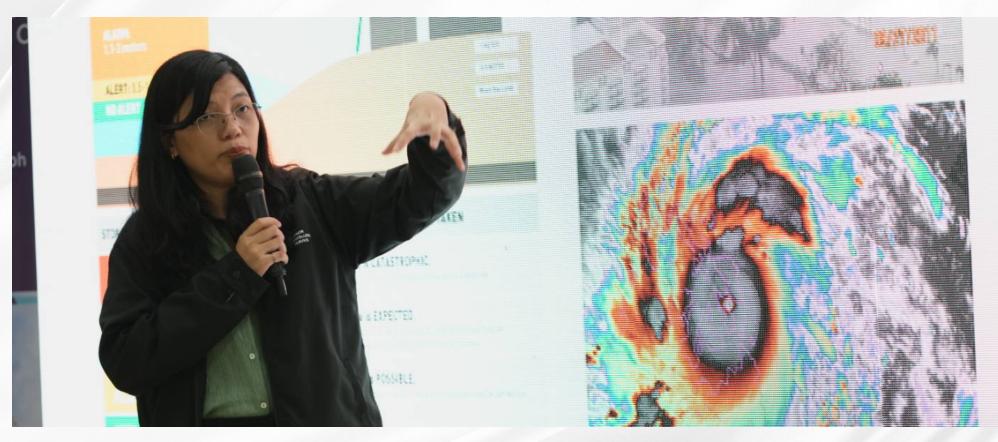
Dr. Minimo successfully presented her work to the Office of the Civil Defense, the House, and the Senate, where it was utilized in drafting position papers on various bills related to disaster management.

This accomplishment is particularly meaningful as it reached the decision-makers who are responsible for shaping policies in the first 10 years of the law's implementation.

Her thesis also became a key resource when she is called upon to assist in training DRRM officials. Despite working with budget constraints, Dr. Minimo visited local governments to better understand how the law was being applied on the ground.

These firsthand observations enabled her to share valuable insights with both national and local government units (LGUs).

Dr. Minimo takes pride in knowing that her work is useful and has the potential to influence future legislation and improve the execution of disaster management policies. She made a deliberate effort to write her thesis in a way that decision-makers could easily comprehend, ensuring that the scientific scenarios presented did not cause public panic. By carefully packaging the information, she aimed to help leaders make more informed and effective decisions.





Leadership and Resilience in Disaster Risk Management

Dr. Minimo began her tenure as Director of Knowledge Sharing at the University of the Philippines Resilience Institute in 2023. However, her involvement in disaster risk management predates this position, extending back to her early days working on flood assessment missions before the establishment of Project NOAH (Nationwide Operational Assessment of Hazards)

During major natural calamities like Typhoon Sendong and Pablo, she was actively deployed for field assessments. The significant milestone in her career occurred during Typhoon Yolanda, when Project NOAH gained momentum. She was then able to focus on volcanology, a field she further pursued during her M.S. studies.

In her current role, Dr. Minimo was selected for her background in Disaster Risk and Resilience, where she emphasizes the importance of proactive planning rather than just reactive responses.

Her primary responsibility involves integrating the work across various divisions of the institute, including Research and Creative Works, Institution Building (collaborating with local government units), and the Education division, which focuses on training and capacity-building programs like the Basics of Resilience Massive Online Course

A significant part of her work is knowledge sharing—translating complex research into accessible knowledge products, lectures, and training sessions. Dr. Minimo has been invited by various private sectors to conduct training on geologic and other types of hazards.

Moreover, she serves as a substitute for Dr. Mahar Lagmay, participating in congressional and senate discussions on important legislative matters such as the CLIMA Bill, Climate Accountability, and the proposed Department of Disaster Resilience. She also provides expert opinions on matters to which the UP Resilience Institute (UPRI) can contribute.

Dr. Minimo is a key figure in decisionmaking when invited to national forums and discussions.

Work-Life Balance: Finding Joy Beyond the Profession

Dr. Likha Minimo values balancing her professional life with activities that bring her joy and relaxation. One memorable experience outside of work was her first hike up to the peak of Mt. Apo, although she admits she was not fully prepared for the challenge. She continued hiking for fun with friends while studying in New Zealand.

Beyond outdoor activities, Dr. Minimo enjoys creative hobbies like crocheting and knitting, often wearing her handmade creations. These crafts offer a peaceful escape from the rigors of her academic and professional responsibilities.

While she occasionally plays football with her nephews and nieces, Dr. Minimo finds her greatest joy in interacting with toddlers and teaching them new languages and concepts in Science. It is fun and interactive way to apply her scientific knowledge in a playful and meaningful context. These moments outside of her work, contribute to her well-being and provide a refreshing source of happiness.



Mentoring the Next Generation of Scientists

Teaching has presented its own set of challenges for Dr. Likha Minimo. Upon graduating, she began her teaching career at the National Institute of Geological Sciences (NIGS) University of the Philippines Diliman, even before obtaining her license. At the time, her students were close to her age, creating a unique classroom dynamic.

After earning her PhD, the age gap between her and her students increased, requiring her to stay current with trends and update her references to maintain strong connections with them. Now, Dr. Minimo's focus has shifted toward mentoring the next generation of scientists. She co-advises theses, drawing on her own experiences as a young scientist to provide the support she once needed.

Dr. Minimo is committed to helping her students make consistent progress and avoiding pitfalls like procrastination and self-sabotage. She recognizes that failure, particularly with models and experiments, can be discouraging but emphasizes the importance of persistence.

The lessons she learned in her early career are now tools she uses to guide and inspire her students, ensuring they stay on track and continue to grow as scientists.

Advice for Aspiring Scientists

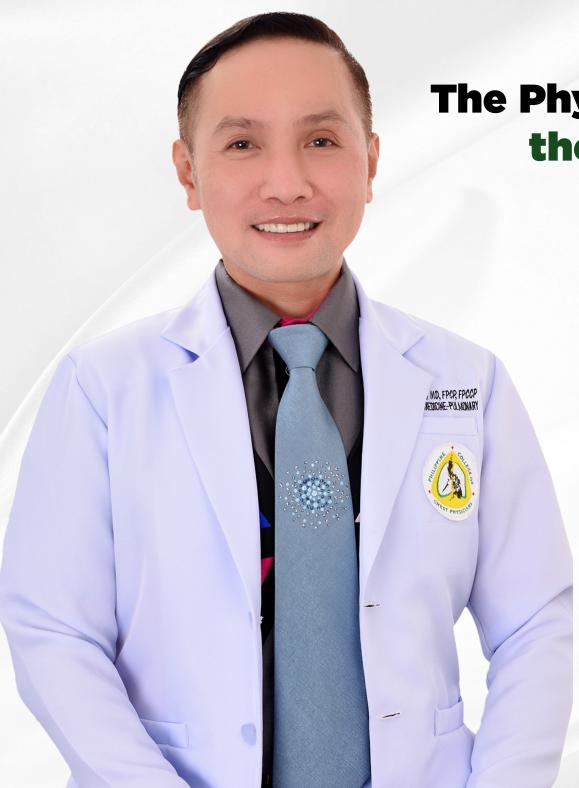
Dr. Minimo encourages those passionate about reading, writing, and experimenting to solve societal problems to pursue a field that truly excites them—one that makes their heart skip a beat. She acknowledges that while geology and similar sciences are challenging, there are ways to make the journey more manageable.

Mentorship has been crucial in Dr. Minimo's career. She values the guidance of her mentors and draws inspiration from her aunt, a fellow scientist who served as a role model. Dr. Minimo emphasizes the importance of having role models, mentors, study buddies, and a supportive scientific community. These relationships provide guidance and foster growth.

Dr. Minimo said that another important aspect of being a scientist is learning how to communicate your science. We make the most impact when we can effectively share our knowledge. Whether through oral presentations, visuals, art, videos, or even vlogs, find ways to communicate your work. Engaging with others helps us understand their needs and discover what more we need to learn.

By staying connected to the realities on the ground, Dr. Minimo ensures that her scientific work reaches those who need it most, demonstrating that impactful science goes beyond research to make a tangible difference in people's lives.





The Physician Who Introduced the 60-Minute Pulmonary **Tuberculosis Test Kit**

by: Khasian Eunice M. Romulo, DOST-STII

One of his most notable contributions Loop-Mediated Isothermal Amplification Test Kit (TB Lamp) for the diagnosis of pulmonary tuberculosis introduced in hospitals in Iloilo City.

In photo: Dr. Rollin P. Tabuena

Specialization: Pulmonology

& Bronchoscopy

Current Affiliation: Asclepius Drugstore Medical

Laboratories and Allied Services

Corp

Photo courtesy of: Dr. Rollin P. Tabuena

Dr. Ma. Daisy Pedroso Tabuena

oc Rollin P. Tabuena, a renowned pulmonologist and the first bronchoscopist in Iloilo City proudly identifies himself as a "*Mama's boy*."

Throughout his journey from medical school to becoming a seasoned physician, the unwavering support, encouragement, provisions, and invaluable lessons imparted by his mother served as the cornerstone of his strength and motivation.

In a world where passion, recognition, and wealth are often celebrated, it is humbling to find an individual whose love and connection with their family, particularly their mother, serves as the guiding force behind their successful journey in the field of medicine.

Dr. Rollin's journey is an inspiring blend of scientific excellence and profound compassion to his community.

Early Beginnings and Education

Dr. Tabuena's story begins in a small town in Concepcion, Iloilo. From an early age, his father taught him to be independent and transferred him to a school in Iloilo City.

He graduated with honors in elementary and high school at the Central Philippine University. He earned a Bachelor's degree in Medical Technology from the Southwestern University in Cebu City.

Encouraged by his father, whose unfulfilled dream is to take up Medicine was what prompted Dr. Tabuena to be a doctor.

At first, he was adamant to pursue Medicine due to lack of financial resources.

But through the support of his parents, especially his mother, he proceeded to medical school at the West Visayas State University. After four years, he was chosen one of the most outstanding interns during his Post-Graduate Internship at the state-owned WVSU Medical Center.

In 1995, Dr. Rollin Tabuena earned his medical license and became the first doctor in the family.

Dr. Tabuena's affinity for Internal Medicine ignited early in his career. While his initial aspiration was to specialize in cardiology, however, he faced a prerequisite to become a diplomate or fellow before embarking on the training program in the Philippine Heart Center.

Eager to avoid unnecessary delays, Dr. Tabuena found himself pursuing Pulmonary Medicine at the Veterans Memorial Medical Center (VMMC) in Manila.

His acceptance into the program hinged on the condition that he successfully pass the diplomate exam within the year—an undertaking he not only accomplished but excelled in by securing one of top positions

Navigating Challenges

Dr. Tabuena was confronted with a myriad of challenges during his practice as a pulmonologist in the province, with one significant hurdle arising upon his return to Iloilo City from his training in Hospital Torette, Ancona, Italy.

In 2004, Dr. Tabuena encountered some difficulty when he introduced the cutting-edge technique of interventional bronchoscopy to a traditionally conservative health practice in Iloilo.



Interventional bronchoscopy was then a novel approach capable of detecting malignancies, infections, and various diseases of the lungs.

His research gathered criticisms from fellow physicians, an experience that temporarily dampened his motivation to pursue further studies in his field.

Aside from colleagues' criticisms, the scarcity of financial support for research among healthcare professionals in the country contributed to a decreased research output.

But Dr. Tabuena's determination to advance the field of pulmonology despite these challenges underscores not only his resilience but also highlights the issues that impact medical research endeavors in the country.

Compassion in Action

Dr. Tabuena's journey to excellence in the field of pulmonology was marked by a commitment to pushing the boundaries of medical science.

His research focused on innovative treatments for pulmonary diseases. One of his most notable contributions was the Loop-Mediated Isothermal Amplification Test Kit (TB Lamp) for the diagnosis of pulmonary tuberculosis was introduced in hospitals in Iloilo City.

Aside from being less expensive than commercially available device, the TB Lamp is also easier to use in that it can give results in just 60 minutes.

It also adheres to the same biosafety requirements that applies to the microscopy sputum smears, which normally takes three days in the traditional procedure.



Essentially, the TB lamp gives a relatively high throughput and does not require sophisticated instruments.

Dr. Tabuena's clinic, Asclepius Drugstore Medical Laboratories and Allied Services Corp in coordination with the Department of Health Iloilo is the center in the diagnosis of tuberculosis in the province.

Iloilo City had the highest confirmed tuberculosis cases because of the efficient and effective diagnosis of TB Lamp.

In October 2023, Dr. Tabuena, together with his wife, Dr. Ma. Daisy Tabuena presented their research on TB Lamp in Honolulu, Hawaii, USA during the American College of Chest Physicians convention.



PANCING PANCIN

Balancing Career & Family Bonds

Away from the hospital corridors, Dr. Tabuena is an advocate for community engagement.

Known as the Dancing Doctors of Iloilo, he and his wife spearheads initiatives to promote healthy lifestyles by Zumba dancing and gym exercises.

The couple actively participates in local events, mentors aspiring medical students, and engages in philanthropic activities to uplift the less privileged.

Despite his many responsibilities, Dr. Tabuena spends time with his family, especially with his son Dane Marco. His family engages into fashion and transforms into passionate models of Iloilo showcasing Hablon creations of local designer Nono Palmos. As he stands at the pinnacle of his career, the longing for his mother's love has become a cherished sentiment. In reflection, he acknowledges that the enduring influence of his mother continues to shape not just his professional success but also the very essence of the person he has become.

Winning Moments

Dr. Rollin Tabuena stands as a beacon of excellence and achievement in his field, having garnered a commendable array of awards that underscore his significant contributions.

Among his notable honors is the Heroes Renowned Medical Internist and Pulmonary Specialist of the Year during the Asia's Golden Icon Awards in February 2023, a testament to his dedication to provide the best healthcare services during the peak of the pandemic.

Dr. Rollin Tabuena's unwavering commitment to excellence has also been acknowledged with the Asia's Most Distinguished Doctor in Pulmonary Medicine Award, showcasing his exceptional leadership and transformative impact in the communities of Iloilo City.

Dr. Tabuena is one proud mama's boy who made his province proud by his TB Lamp.



The Brain-Nerve Connection:

The Neurologist Who Almost Did Not Beat the Deadline

by: by: Louella L. Pestaño, DOST-STII

Dr. Ma. Daisy Pedroso Tabuena, a proud Ilongga neurologist and internist with 20 years of medical practice, says otherwise as she humbly recalls her journey to become one of the coveted physicians and inspirational medical professors in Iloilo City.

In photo: Dr. Ma. Daisy Pedroso Tabuena

Specialization: Adult Neurology and Electromyography

Current Affiliation: Asclepius Drugstore Medical

Laboratories and Allied Services Corp

Photos courtesy of: Dr. Ma. Daisy Pedroso Tabuena

Dr. Rollin P. Tabuena



Being a doctor was not really my ambition when I was little; just any profession would do because living on the farm was difficult. In fact, I was the last one to apply to the College of Medicine, and the funny thing was, I prepared and submitted all therequirements the same day at 4 o'clock, the deadline for submission," said Dr. Tabuena.

Without realizing it, the universe conspired to give birth to a doctor who would genuinely care for and serve her patients.

Remembering Her Significant Vernal Years

Dearly known by her peers as Ms. Bright, Dr. Tabuena shared that her parents did not pressure her to be excellent academically, but she was raised in a highly conservative household. For instance, she could not go to the beach with her classmates, even if it was a school activity.

The mind of young Daisy found it complicated to understand why her parents were strict, but sooner she figured out why. Laughingly, she admitted that sometimes she sneaked into their house to join her friends playing outside.

Despite young Daisy's strict upbringing, she still considers herself a daddy's girl among her other two sisters. When asked about her fondest memory with her father, she recalls helping her father during tax season since they own farmland.

Her father had difficulty completing their annual income tax and often returned several times to town for corrections. Since taxation was one of her high school subjects, she amazed her father by computing the income tax correctly.

On the other hand, Dr. Tabuena's most important lesson from her mother was to be independent of life's challenges, from preparing items for camping to preparing a meal using a live chicken.

As early as high school, Dr. Tabuena lived separately from her family in a dormitory near her school. Hence, it was no longer a big adjustment for her while studying Medicine.

Gyri and sulci of her professional career

Like a brain with convolutions called gyrus (raised) and sulci (groove) layers, which are attributed to the increase of its surface area, Dr. Tabuena faced several challenges and triumphs in her life before she reached the peak of her medical career.

Dr. Tabuena finished her elementary and high school as class valedictorian and salutatorian, respectively. However, the transition to college was not as seamless as it turned out to be since Dr. Tabuena was still trying to figure out where to enroll.

Fortunately, she has a persistent and supportive cousin who advised her to take up Bachelor of Science in Biology at the West Visayas State University and provided financial support for her enrollment.

In 1992, Dr. Tabuena graduated Magna cum Laude. Later that year, that same cousin prodded her to pursue Medicine.

Studying Medicine was not as easy as in college; another story is passing the board exam. In her first year in medical school, she had many thoughts of quitting because studying overnight was not enough, and sleep was scarce.





During her clerkship, she shared that regular days and holidays are no longer different because they are busy attending to the patients in the hospital.

In 1993, she began her residency program under the Department of Internal Medicine at West Visayas State University Hospital, where she also served as Chief Resident for Internal Medicine. Dr. Tabuena took her fellowship in neurology at the University of the East–Ramon Magsaysay Memorial Hospital in 1997; she also became the Chief Resident.

Initially, Dr. Tabuena did not plan to be a neurologist; instead, she wanted to become an oncologist, a medical physician specializing in diagnosing and treating cancer and blood disorders, since there was only one oncologist in Iloilo then. However, after several applications to institutions, Dr. Tabuena was not accepted, so she decided to shift to another specialty.

"Everything happens for a reason. I was not accepted to oncology because maybe I was more suited to neurology," shared Dr. Tabuena.

She also aspired to become one of her professors who practiced Medicine and taught as a medical consultant in medical school. She excelled in her specialty, and more significant opportunities paved her journey.

In 2002, Dr. Tabuena received the Takeda Post Graduate Fellowship Grant Training in Electromyography at the Department of Clinical Neuroscience at the University of Tokushima, Tokushima, Japan. Two years later, she received the Japanese Scholarship Grant for Foreign Students on Electromyography and Dystonia at the same university. Fortunately, the language barrier did not become a challenge because her professor just returned from the United States. The only challenge she had was the Japanese culture and lifestyle.

Presently, Dr. Tabuena practices her specialty as a neurosurgeon, serves as a lecturer in the College of Medicine, and is affiliated with several hospitals in Iloilo City, such as West Visayas State University Medical Center, Iloilo Mission Hospital, Iloilo St. Paul's Hospital, Iloilo Doctors Hospital, and Medicus Medical Center. She is also the co-owner of Asclepius Medical Clinic.

Medical Breakthrough for the llonggo Community

Diagnosing patients was challenging because some of Dr. Tabuena's patients would return to her for consultation several times to the point she could no longer give an accurate diagnosis.

As a result, she went to Japan to gain value-added training, knowledge, and a new approach to her specialty.

Dr. Tabuena's extensive training in Japan inspired her to pursue medical research on X-linked dystonia parkinsonism, vascular dementia,

hemorrhagic stroke, electromyography, and nerve conduction studies.

Furthermore, Dr. Tabuena specializes in electromyography (EMG), which identifies peripheral nerve and muscle disorders.

There are two parts to the entire procedure: first is the electrical simulation to determine nerve activity, its health, lining, and other associated identifiers; the second is the muscle testing, where a needle is inserted to determine muscle activity.

Dr. Tabuena mentioned that EMG can diagnose diseases like amyotrophic lateral sclerosis, myasthenia gravis, and carpal tunnel syndrome. According to her, the technology was already available in a few hospitals in

Metro Manila, but it was contemporary in Iloilo City. At first, many of her patients are hesitant to partake in the new intervention because of the conservative nature of the community.

Still, she doubly reassures her patients that the new approach is safe, fast, and accurate. Eventually, the Ilonggo community and its nearby provinces realized the benefits of this transformative technology, which became the gold standard in diagnosing complex neuromuscular disorders.

For example, one patient who underwent electromyography was mistaken to have dystonia. But, it turned out to be a rare type of disease that, when missed or diagnosed late, the patient could not walk anymore. Otherwise, the patient can cope with mobility.







Despite reaching the pinnacle of her expertise, she emphasized there is no stopping to learn and improve in her profession because technology is continuously evolving. She added that her three-year training in Japan was not enough to master the technology. It needs continuous practice and technology exposure to enhance skills and knowledge.

"Your goal is already achieved, and you have achieved more, so you should be happy," Dr. Tabuena uttered when asked to message her younger self.

When it comes to EMG that she currently uses in her clinic, if given the opportunity, Dr. Tabuena wants to add a magnetic stimulator that can navigate the brain and apply treatment modalities like stimulating a particular part of the brain to treat neurologic cases like stroke and movement conditions, and psychiatric conditions like depression and schizophrenia.

"Success is when you are already contented with what you have and achieved, whether small or big, as long as you are satisfied with the result. Importantly, you left a significant impact on your society, your family, and even yourself," said Dr. Tabuena as she wrapped up her professional career.

The Cerebral Perspective - Her Personal Life

The cerebrum is one of the main important parts of the brain because many human activities like thinking, language, emotions, and personality traits are controlled in this area. Similarly, every personal life is significantly influenced by family. Without them, life becomes shallow and coreless. Hence, beyond healing and relieving her patients' pain, the most rewarding feeling is wrapping up her day with her family, exemplifying work and life balance.

Despite the overwhelming responsibilities of a neurologist and professor, Dr. Tabuena is a charming and loving wife to Dr. Rollin P. Tabuena, a renowned pulmonologist who gave birth to TB Lamp, a rapid molecular detection test for tuberculosis. She is also a caring and supportive mother to their unico hijo, Dane Marco.

Dr. Tabuena recalls her spouse as persistent and delightful when they met in the hospital. Dr. Rollin would always invite her to join in special conferences or gatherings.

Although focusing on different specialties, together, they spent their fellowship and post-graduate fellowship training in Manila and Japan, respectively.

Likewise, handling her role as a mother and physician flawlessly, Dr. Tabuena said making a feasible schedule and accepting extended support from her mother to attend to her son while working at the hospital allowed her to succeed.

As a result, Dane Marco grew up very close to his parents. Dr. Tabuena also shared that her son did notgive them challenging times when they were abroad for conferences, but he began checking their whereabouts as he grew up.

Since they are often out of home for work, Dr. Tabuena would describe herself as a strict but caring mother who values quality time with her family, like cooking food for Dane or dining out.

Moreover, whenever the schedule was amenable to their family, they would spend their vacation elsewhere, for instance, her most memorable family trip to Paris, France. In September 2023, Dr. Tabuena shared they had a mishap in Paris while strolling around because they rode the train. She recalled how stressful and funny it was because they entered at the wrong end of the train; their actual seats were at the front, but they entered from the back.

So upon alighting, they had to find their baggage in every compartment at the back end of the train while getting anxious about whether they could find all their stuff before the train left. Nevertheless, the family had a well-spent vacation and learned an important lesson about the situation.

Dr. Tabuena is also a certified fur parent to their domestic cats---Peanut, Mori, Bruno, and Cramer. She even has a massive collection of photos and videos of her lovable pets on her phone, memorializing their funny moments.

She loves dancing Zumba, making the Tabuena doctors called The Dancing Doctors of Iloilo. Once it began as a hobby, it emerged as in-demand modern calisthenics throughout the country.

The couple also created social media accounts to reach a bigger audience and inspire individuals to enjoy a healthy lifestyle. Dr. Tabuena shared that they decided to try Zumba for health reasons during the COVID-19 pandemic.





Dr. Tabuena also loves modeling and charity work. There was an instance where the couple modeled hablon fabric to showcase local fabric and designs and uplift the country's weaving industry.

Words of Inspiration from a Licensed to Heal

"Love your patients and do your job wholeheartedly. Not because of the money we will be getting from it but because we know ourselves that we help people alleviate their pain. That we did something good for people," underscored Dr. Tabuena to all Filipino physicians.

She also mentioned that the learning and skills they gain are not solely for them but for the community they serve. She also advised future physicians never to give up, even if the trials and tribulations seem impossible to surpass.

"Patience, resiliency, and determination are key to finishing medical school," Dr. Tabuena underscored.

She added that when they start their rounds in the hospital, they should always check the charts and know

their patient's medical records as if they are memorizing their name.

Undeniably, Dr. Ma. Daisy Pedroso Tabuena is a great Filipino physician, and her patients are grateful for her knowing that she truly cares for them.

Success does not come easy—even the most brilliant person sometimes finds it challenging to stay on track. It takes blood, sweat, and tears before someone can taste true success.

As Eleanor Roosevelt, former First Lady of the United States, said, "I am who I am today because of the choices I made yesterday."

