THE PHILIPPINE - AMERICAN Academy of Science & Engineering

PHILIPPINE-AMERICAN ACADEMY OF SCIENCE AND ENGINEERING

PAASE Monthly Newsletter

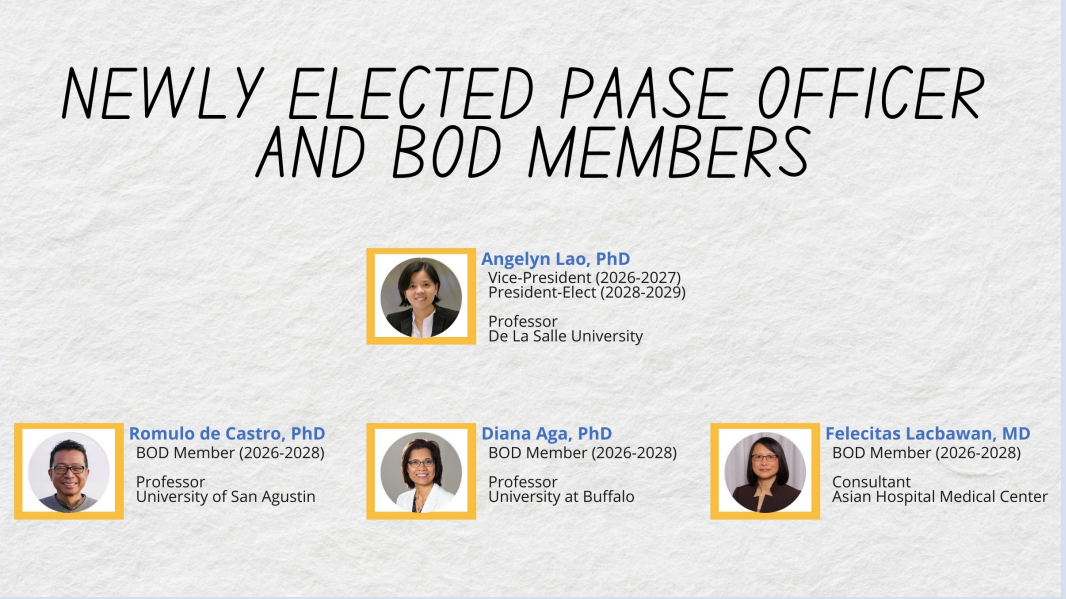
Volume: Year 2025 | October and November Issue

Congratulations Message for the Newly Elected PAASE Leadership

The Philippine American Academy of Science and Engineering congratulates **Dr. Angelyn Lao**, the newly elected Vice President and President Elect of PAASE. She will assume office as Vice President for the 2026 to 2027 term, and will serve as President Elect for 2028 to 2029. We extend our warmest congratulations to Dr. Lao as she steps into this important leadership role and continues her long standing commitment to advancing science and engineering for national development.

We also congratulate the newly elected members of the PAASE Board of Directors who will serve from 2026 to 2028. These are **Dr. Romulo "Jong" de Castro**, **Dr. Diana Aga**, and **Dr. Felicitas Lacbawan**. Their selection reflects the trust and confidence of the community in their vision, integrity, and dedication. We look forward to the fresh ideas and continued service they will bring to the organization.

PAASE celebrates this new group of leaders as they take on their roles in strengthening our programs, supporting our members, and promoting scientific excellence in the Philippines and the global Filipino scientific community.



Appreciation for the Outgoing PAASE Board of Directors

PAASE extends its deep gratitude to the members of the Board of Directors who will be completing their terms this year. Their leadership, commitment, and

generosity of time have significantly strengthened the organization and supported its mission throughout their tenure.

We thank **Dr. Gonzalo "Al" Serafica** and **Dr. Arnel Salvador**, who also served as former Board Chairpersons, for their steady guidance and dedication to organizational stewardship. Their leadership helped PAASE grow in visibility, impact, and community engagement.

We likewise recognize **Dr. Rigoberto "Gobet" Advincula** for his strong support of PAASE programs, particularly in research, innovation, and international collaboration. His expertise and active involvement enriched the work of the Board and the membership.

We also extend our appreciation to **Dr. Mariano R. Sto. Domingo**, who served as Ex Officio Member. His commitment to service and collaboration contributed greatly to important initiatives and decision making processes.

PAASE conveys its sincere thanks to all our outgoing Board members for their valuable contributions. Their service has made an enduring impact and will continue to inspire the next generation of leaders.

Culminating Session of Pagtanaw 2050

The culminating session of PAGTANAW 2050 on October 24, 2025 gathered scientists, academics, and policymakers to reflect on the foresight's progress and discuss how science and technology can guide the country toward a more sustainable future. The event was part of the joint PAASE–NAST Fireside Chat Series.

Academician Rhodora V. Azanza opened the discussion by sharing how the foresight has begun to shape government programs, including the National Climate Action Plan. She emphasized the need to continue strengthening collaboration among government, universities, and industries. She also mentioned that NAST is now working with the Department of Science and Technology on a new set of indicators and metrics to track progress across key areas. She echoed the calls from other experts to further develop the country's human capital and to promote open access to scientific data. She also welcomed the suggestion of adding more social science perspectives to make planning more inclusive and community-based.

Academician William G. Padolina highlighted the value of "useful knowledge," which he described as understanding both the reasons behind scientific discoveries and their practical applications. He suggested that PAGTANAW 2050 continue updating its list of emerging technologies and include more studies on the economic history of the Philippinesto understand how past developments have shaped poverty and national growth. He noted that while NAST is not an implementing body, it plays an important role in influencing institutions that can act on these ideas.

Academician Marie Antonette Juinio-Meñez focused on the potential of the blue economy and how science can help create new opportunities in aquaculture, seaweed farming, and coastal tourism. She proposed combining top-down planning with bottom-up or community-driven approaches, which she described as

a “bibingka” method. This approach recognizes the diversity of local contexts and the need to measure progress differently across industries and regions.

During the open forum, several reactors offered critical and forward-looking insights. Dr. Romulo de Castro spoke about the social responsibility of scientists, urging the science community to take an active role in promoting transparency and fighting corruption. He suggested using digital and data systems to detect both financial and scientific fraud and to make government processes more accountable.

Academician Gisela P. Concepcion expanded on the idea of combining knowledge and know-how, stressing that scientific theory must always connect to practice. She called for stronger mentorship and leadership development, particularly for young scientists, and supported the creation of local postdoctoral opportunities to encourage Filipino researchers abroad to return home. She also underlined the need to develop local expertise in critical areas such as metallurgy, artificial intelligence, and environmental sustainability.

Dr. Felicitas Lacbawan highlighted the importance of creating a Filipino Human Genome Database, explaining that Filipino genetic diversity is not yet well represented in global health data. She linked this gap to missed opportunities in molecular diagnostics and personalized medicine. She also raised issues of talent retention and the lack of career paths for scientist-clinicians in the Philippines.

Dr. Gregorio del Pilar and Dr. Edna Co both discussed the need for continuity in governance. They urged scientists to plan within political cycles while keeping long-term goals in mind. Dr. Co emphasized grounding ambitious visions like PAGTANAW 2050 in what is achievable within each six-year administration. She reminded the group that good governance depends on connecting scientific vision with practical realities on the ground.

Dr. Ma. Carmen Lagman brought in the perspective of coastal communities, recalling her conversations with small-scale fishers who appreciated but sometimes felt detached from scientific projects. She urged researchers to stay connected to the people who will benefit from their work and to ensure that science remains relevant to community needs.

Dr. Mariano Sto. Domingo focused on the well-being of scientists themselves. He called for systems that nurture curiosity, mentoring, and professional growth from early education to leadership levels. He proposed building “developmental clusters” that link schools, universities, and industry partners to strengthen the pipeline of Filipino scientists.

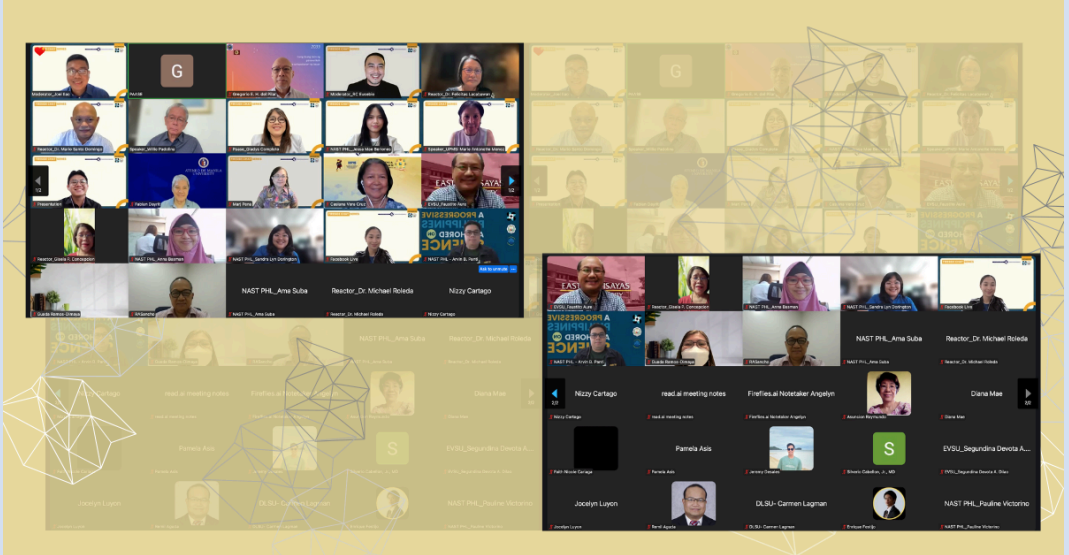
The session ended with a shared recognition that the country’s scientific future depends on both innovation and inclusion. Participants agreed on several key steps: setting measurable goals across political terms, promoting the circular economy, prioritizing technologies that reduce poverty and improve governance, investing in scientists and mentorship, and integrating social sciences into technical planning.

The culminating session shed light to the important actionable topics that need addressing. These are:

1. Define Long-term, Cross-Administration Targets: Set realistic, achievable targets broken down into six-year periods to align with political cycles while maintaining the 30-year long-term vision.
2. Incorporate Circularity and Life-Cycle Assessments: Move beyond just resource generation (e.g., renewable energy, water supply) to include end-of-life issues (recycling solar panels/batteries) and full life-cycle assessments of chosen technologies (Ocon, de los Reyes).
3. Prioritize Poverty-Alleviating and Governance-Enhancing Technologies: Re-evaluate emerging technologies (e.g., precision medicine) against their immediate relevance to poverty reduction the fundamental driver of inequity and prioritize technologies that address pressing societal challenges such as corruption, fraud, and inefficiency in governance systems.
4. Invest in the Scientific Talent Pool: Invest in the Scientific Talent Pool and Well-being: Strengthen the country’s scientific and technical workforce by providing competitive work opportunities, mentorship, and leadership development programs that ensure continuity and succession of scientific expertise across generations. Equally prioritize the well-being, motivation, and professional growth of scientists to sustain an engaged and resilient scientific community.
5. Integrate Social Sciences in Technical Planning: Embed social science perspectives into all technical clusters to balance technological progress with societal impact, justice, and environmental trade-offs

The culminating session of PAGTANAW 2050 closed on an optimistic note. It showed that the foresight has not only inspired scientific collaboration but also sparked important conversations about ethics, education, and social responsibility.

Together, these reflections point toward a more people-centered approach to science, where knowledge, practice, and governance work hand in hand for national progress.



Report on the PAASE–NAST Partnership and Plans for an MOU

The Philippine-American Academy of Science and Engineering (PAASE) and the National Academy of Science and Technology (NAST Philippines) have entered into a contract of services to strengthen collaboration on the ongoing update of the country's science and technology foresight, PAGTANAW 2050.

Under this agreement, PAASE, represented by its president Dr. Gladys Cherisse J. Completo, will serve as an external reviewer for the project titled "PAASE's Critical Evaluation of PAGTANAW 2050: A Review to Guide the Future of Philippine STI." The partnership involves a comprehensive review of the foresight document from an international perspective, ensuring that the updated PAGTANAW 2050 reflects both global trends and local priorities in science, technology, and innovation.

As part of the engagement, PAASE organized a four-part Fireside Chat Series to gather insights from Filipino scientists and experts in the Philippines and abroad. A final report summarizing findings and recommendations will be submitted to NAST by December 15, 2025.

Looking ahead, both organizations are exploring the signing of a Memorandum of Understanding (MOU) to formalize future cooperation. The planned MOU will cover areas such as research collaboration, policy foresight, mentorship, and science communication. This initiative reflects the shared commitment of PAASE and NAST to build stronger partnerships between Filipino scientists across borders and to promote evidence-based policymaking for national development.

Congratulations, Dr. Alvin B. Culaba!

PAASE proudly celebrates Dr. Alvin Culaba for being officially conferred the title of ASEAN Engineer by the ASEAN Federation of Engineering Organizations (AFEO)!

The conferment ceremony, organized by the Philippine Technological Council (PTC) as AFEO's national member organization, was held on October 28 at the SMX Convention Center in Clark, Pampanga.

Dr. Culaba was honored for his exceptional leadership, professional excellence, and contributions to the advancement of engineering in the Philippines and across Southeast Asia. His pioneering work in energy systems, life cycle assessment, sustainable manufacturing, and S&T policy continues to drive the country's clean energy transition and environmental innovation, while building the next generation of Filipino engineers and scientists.

The ASEAN Engineer Register (AER) recognizes professionals who exemplify integrity, competence, and regional impact in engineering practice. The ASEAN Engineer title signifies not only individual achievement but also strengthens cross-border collaboration and mutual recognition among ASEAN engineers.

Dr. Culaba's recognition highlights his vital role in advancing sustainable engineering solutions and mentoring future innovators, reinforcing the Philippines' commitment to a greener, science-driven, and more connected ASEAN community.

Congratulations to Dr. Jurgenne Primavera!

PAASE congratulates Dr. Jurgenne Primavera for receiving the 2025 Hatai Medal for her seminal contributions to mangrove preservation in the Southeast Asian region.

She was honored during the 24th Pacific Science Congress, a fitting recognition of her lifelong dedication to marine ecology, coastal conservation, and the protection of vulnerable ecosystems.

The Hatai Medal commemorates Dr. Shinkishi Hatai, the first director of the Asamushi Marine Biological Station, the first professor of the Department of Biology at Tohoku University, and the founder of the Palau Tropical Marine Biological Laboratory. Established in 1963 by the Pacific Science Association, this award recognizes scientists who have made outstanding contributions to Marine Biology in the Pacific region.

This achievement is especially meaningful because the Hatai Medals are book ended by two Filipinos: Dr. Deogracias Villadolid, the first Hatai Medal awardee in 1966 for Ichthyology, and now Dr. Jurgenne Primavera. PAASE proudly celebrates this remarkable milestone and honors Dr. Primavera for bringing global attention to the importance of mangrove conservation.

Congratulations, Dr. Primavera. Your work continues to inspire scientists and advocates across the world.

Congratulations to Dr. Alfredo Mahar Francisco Lagmay!

PAASE congratulates Dr. Alfredo Mahar Francisco Lagmay for being honored with the 2025 Tatler Award for Innovation.

This recognition celebrates his pioneering work in science based disaster resilience and risk reduction, especially through the Nationwide Operational Assessment of Hazards or NOAH, a landmark initiative that has transformed how communities and institutions prepare for natural hazards.

Dr. Lagmay serves as the Executive Director of the UP Resilience Institute and has earned wide recognition in the Philippines and across the world for his leadership in developing innovative, accessible, and life saving tools for disaster preparedness. He was also named one of Tatler Asia's Most Influential of 2024, further affirming his significant impact on society.

Congratulations, Dr. Lagmay. May your work continue to uplift our communities and guide future generations of scientists and innovators.

UPLB Institute of Chemistry and PAASE Highlight AI/ML Frontiers in Science through KIMIKAalaman IC Seminar Series No. 2

The **UPLB College of Arts and Sciences – Institute of Chemistry (IC), in collaboration with the the Philippine-American Academy of Science and Engineering (PAASE)**, hosted the second installment of the KIMIKAalaman IC Seminar Series titled *"Advances in AI/ML Computing, Materials, and Chemistry"* on October 27, 2025, from 1:00 to 4:00 PM at PSLH A and via Zoom. This hybrid event brought together distinguished scholars and researchers exploring the transformative role of artificial intelligence (AI) and machine learning (ML) in modern chemistry and materials research.

Prior to the seminar, Prof. Rigoberto Advincula of the University of Tennessee and Prof. Wonbong Choi of the University of North Texas paid a courtesy visit to the UPLB Office of the Chancellor. They were received by Prof. Gladys Cherisse J. Completo, Ph.D., Director of the UPLB CAS Institute of Chemistry and President of PAASE, along with Prof. Rossana Marie C. Amongo, Ph.D., UPLB Vice Chancellor for Planning and Development, representing Chancellor Jose V. Camacho, Jr. The meeting underscored potential collaborations in curriculum innovation, including the integration of AI/ML as a future General Education course at UPLB.

The seminar proper featured an impressive lineup of speakers: Prof. Rigoberto Advincula, Ph.D., Prof. Wonbong Choi, Ph.D., Prof. Jomar Rabajante, D.Sc., and Assoc. Prof. Val Randolf Madrid, Ph.D. Each expert presented forward-looking insights into how computational tools and AI-driven methods are reshaping the scientific landscape. Discussions ranged from predictive modeling in materials design to the use of machine learning in chemical analysis and education.

The event provided an avenue for faculty, students, and researchers to engage with frontier ideas at the intersection of data science, chemistry, and materials engineering. It also reaffirmed the commitment of the UPLB Institute of Chemistry and PAASE to advancing interdisciplinary collaboration and innovation in the sciences.

SciEnggJ Featured Article: Wastewater surveillance of SARS-CoV-2 RNA and detection of emerging viral variants from wastewater in the city of Manila, Philippines

Wastewater surveillance of SARS-CoV-2 RNA and detection of emerging viral variants from wastewater in the city of Manila, Philippines

Leslie Michelle M. Dalmacio*[1], Ruth C. Abanador[1,2], Nathaniel John Q. Cruz[1], Renan Ma. T. Tanhueco[3], Michael Angelo B. Promentilla[3], Aileen H. Orbecido[3], Arnel B. Beltran[3], and Miguel Antonio S. Salazar[4]

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[2]Graduate School, University of the Philippines Los Baños, Los Baños, Laguna, Philippines

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Abstract:

Wastewater-based epidemiology (WBE) of SARS-CoV-2 has been explored in many countries during the past years of the COVID-19 pandemic (2021-2022) along with cost-efficient large-scale monitoring of infection. In this study, samples (n=88) were collected for three consecutive months at four different sites (A - hospital, B - immediate hospital-government offices, C - residential, D - residential-commercial). RT-qPCR was used to quantify SARS-CoV-2 RNA, concentrations, specifically the N1 and N2 genes, in samples collected from a sewer network from a hospital to a community in the City of Manila, Philippines. Monte Carlo Simulation software was then used to compute the viral RNA prevalence in the wastewater matrix. Whole genome sequencing was then conducted to determine the emerging SARS-CoV-2 viral variants in wastewater. Results showed a higher detection rate of N1 genes compared to N2 genes. The highest concentration of viral RNA was obtained from Site A, while the lowest concentration was obtained from Site C. All 13 sequenced samples were representatives of Omicron variants, five of which were detected prior to their first detection in clinical samples. Notably, three Omicron subvariants were detected in both wastewater and clinical samples within the same sampling period. These show that SARS-CoV-2 RNA has potential as a biomarker for WBE in Manila, Philippines. However, further studies are needed to optimize the viral RNA recovery protocols and plans to recommend policies for efficient sewer line management should go hand in hand for the successful integration of this system in the City of Manila.

KEYWORDS:

CO_2 Molecular biology, Virology, wastewater, SARS-CoV-2, emerging viral variants

Access the full article using this link:
https://scienggj.org/2025-383/

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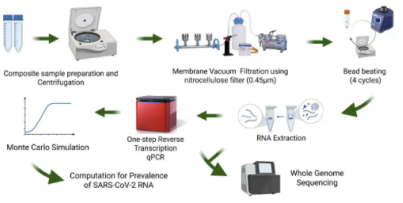

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ARTICLE

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November 2025 PAASE Webinar

The Philippine American Academy of Science and Engineering (PAASE) held an insightful webinar featuring **Dr. Laurence L. Delina**, Associate Professor of Environment and Sustainability at the Hong Kong University of Science and Technology (HKUST). His talk, titled "***Justice Driven Renewable Energy Transitions for Vulnerable Philippine Communities,***" examined how science, policy, and governance can work together to promote equitable and sustainable energy futures.

Dr. Delina is an accomplished scholar who has published more than fifty peer reviewed articles and four books on sustainability and climate change. He also serves in editorial roles with Energy Research and Social Science, PLOS Climate, and the Journal of Environmental Studies and Sciences. A former Rachel Carson Fellow, Balik Scientist, and Visiting Fellow at the Harvard Kennedy School, he completed his PhD at the University of New South Wales Sydney. Moderator Dr. Dan Ibarra introduced him and highlighted his significant research contributions.

Dr. Delina emphasized the urgency of justice centered renewable energy transitions, especially for Philippine communities that experience climate extremes, energy insecurity, and long standing inequities. Drawing from research conducted with Oxfam Philippines, he presented findings from surveys, interviews,

and focus group discussions in three climate vulnerable communities. The study highlighted how climate risks intersect with economic, social, and geographic vulnerabilities.

He also discussed the four principles of energy justice:

- Distributive justice, focusing on fair access to clean and reliable energy
- Recognition justice, which acknowledges the identities and needs of marginalized groups
- Procedural justice, which promotes inclusive and transparent decision making
- Restorative justice, which seeks to address historical injustices in the energy sector

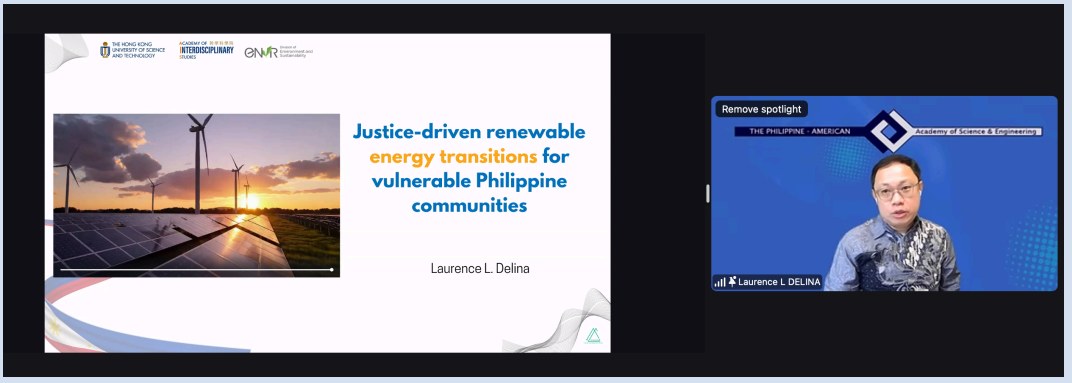
Concepts such as energy access, prosumerism, and renewable energy transition pathways were also explained to highlight opportunities for clean, affordable, and participatory energy systems.

Findings from the study revealed strong support for renewable energy across communities. However, major barriers remain, particularly limited financial capital and concerns about cost. Perceptions also differed between rural and urban communities due to variations in culture, available resources, and local governance.

Key recommendations included:

- Strengthening regulatory support and streamlining processes such as net metering permit applications
- Establishing tailored financing mechanisms and community based support systems
- Designing place specific policies that consider local social and economic dynamics and uphold energy justice principles

The open discussion included comments from Tito, who emphasized the importance of affordable and accessible energy. Both he and Dr. Delina noted the need to consider social science perspectives, which help explain behavioral and psychological dimensions of energy transitions, alongside technical solutions.



Join Us for the PAASE Year End Event!

The holiday season is here, and we are excited to invite you to our **PAASE Year End Event** via Zoom on **6 December 2025 at 9:00 AM PHT | 5 December 2025 at 8:00 PM EDT.**

The event will be hosted by Dr. Angelyn Lao and Dr. Andres Philip Mayol.

Let us come together to celebrate our achievements, enjoy fun activities, and share the spirit of the season. To make the event even more festive, **please wear something RED**.
It will add joy, warmth, and a cheerful holiday touch to our gathering.

Zoom link: https://bit.ly/4p1a0YY
Meeting ID: 889 2194 3942**Passcode:** PAASE2025

We look forward to seeing you in your bright and merry red outfits as we wrap up another meaningful year together.

PAASE Officers and Board of Directors

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Vice President (2024-2025) & President-Elect (2025-2026)

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Maria Luisa Virata, PhD
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Arnel Salvador, PhD
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2024-2026: Angelyn Lao, PhD · Edna Co, PhD · Joost Santos, PhD

2025-2027: Leah Tolosa Croucher, PhD · Carmen Ablan-Lagman, PhD · John Ryan Dizon, PhD

Ex-Officio: Mariano Sto. Domingo, PhD

Thank you for your continued support and participation in PAASE.
We appreciate your dedication and commitment to our organization.