2025 ACCOMPLISHMENTS

National Academy of Science and Technology

RECOGNITION FUNCTION

The Academy recognizes exemplary achievements in science, technology, engineering, and mathematics (STEM), provides incentives, and nurtures emerging talents in various fields.

ORDER OF NATIONAL SCIENTIST

The conferment of the Order of National Scientist by the President of the Republic of the Philippines is the highest honor being given to a Filipino man or woman of science. Nominees should receive 70 percent of the total votes of the full membership of the Academy before being recommended to the President of the Philippines for the honor. The award was created pursuant to Presidential Decree No. 1003-A on 16 December 1976. Since 1978, 43 Filipinos have been conferred as the Order of National Scientist. Once conferred, a National Scientist is entitled to privileges and benefits similarly enjoyed by a National Artist (though with different amounts).

To date, there are 11 living National Scientists.

NATIONAL SCIENTISTS	FIELD OF SPECIALIZATION
Mercedes B. Concepcion	Demography
Lourdes J. Cruz	Biochemistry
Romulo G. Davide	Nematology/Plant Pathology
Ernesto O. Domingo	Internal Medicine / Gastroenterology
Raul V. Fabella	Economics
Emil Q. Javier	Plant Breeding and Genetics
Ricardo M. Lantican	Plant Breeding and Genetics
Bienvenido F. Nebres, SJ	Mathematics
Carmencita D. Padilla	Human Genetics
Dolores A. Ramirez	Biochemical Genetics
Gavino C. Trono, Jr.	Marine Botany

ELECTED ACADEMICIANS FOR 2025

Membership to the Academy is by peer recognition and carries with it the title of "Academician." Elected as members are resident Filipino scientists who have made exemplary contributions to science and technology and have advanced its cause in the Philippines. To date, there are 81 living members (11 of which are National Scientists).

LEOCADIO S. SEBASTIAN, Ph.D. Agricultural Sciences
Dr. Leocadio S. Sebastian is recognized for his significant contributions to agricultural research and development in the Philippines and Southeast Asia. He played a key role in national programs, notably the Masagana Rice Industry Development Program, to achieve rice self-sufficiency in the Philippines.

WILFREDO Y. LICUANAN, Ph.D. Biological Sciences
Dr. Wilfredo Y. Licuanan is recognized for his significant contributions to coral reef research and conservation in the Philippines. He champions citizen-science through low-cost methods and public training. His efforts have earned him multiple national awards.

CHARLES Y. YU, M.D. Health Sciences
Dr. Charles Y. Yu is recognized for his significant contributions to tuberculosis diagnostics, treatment, prevention, and vaccine development. He has led research on artificial intelligence-based tuberculosis diagnostics, including cough and lung sound analysis x-ray tools. He pioneered the use of tuberculosis drugs in the Philippines, leaving a lasting legacy on public health.

MAJOR RECOGNITION AWARDS

Outstanding Young Scientist (OYS) Award

The Outstanding Young Scientist (OYS) award is given to young Filipino scientists (must not be 41 years old within January to December in the year of the award) who have made significant contributions to science and technology. Ten young Filipino scientists received the award.

In the field of Agricultural Sciences, **Dr. Excel Rio Maylem** was honored for his pioneering research at the Philippine Carabao Center on animal reproduction and physiology, specifically his work on hormonal regulation and the development of climate-resilient, thermotolerant water buffalo breeds to secure local livestock productivity. Joining him is **Ms. Melissa Montecalvo**, whose vital contributions to crop protection at UPLB focus on sustainable, biological pest management, including the use of entomopathogenic fungi against the destructive fall armyworm and combating the onion anthracnose-twister disease.

In the Biological Sciences, **Dr. Garry Benico** was recognized for his critical work in aquatic biosciences at Central Luzon State University, particularly the taxonomy of harmful dinoflagellates and microalgae, which empowers the mitigation of Harmful Algal Blooms (HABs) that threaten fisheries and public health. **Dr. Mark Calabon** of UP Visayas was equally celebrated for his extensive research in aquatic mycology and fungal systematics, identifying novel mangrove fungi and advancing the use of fungal bioremediation to address heavy metal pollution in local waterways.

For Engineering Sciences and Technology, **Dr. Andres Philip Mayol** of De La Salle University was awarded for his innovative integration of mechanical engineering, computational intelligence, and life cycle assessment (LCA) to optimize microalgae biorefineries and develop sustainable, eco-friendly manufacturing systems.

In the Health Sciences, **Dr. Fresthel Monica Climacosa** from UP Manila earned the distinction for bridging immunology and diagnostics, notably developing low-cost, synthetic peptide-based serologic assays that enhance the country's capacity to detect and respond to emerging viral threats and infectious diseases.

The Mathematical and Physical Sciences division recognized **Dr. Rolando Candidato, Jr.** of Mindanao State University - Iligan Institute of Technology for his advanced research in materials science, specifically the fabrication of plasma-sprayed nanostructured coatings designed for photocatalytic environmental remediation and water treatment. He is joined by **Dr. May Anne Mata** of UP Mindanao, whose exemplary work in applied mathematics and infectious disease modeling translates complex mathematical biology into actionable public health policies for local communities.

Finally, in the Social Sciences, **Dr. Rowalt Alibudbud** was awarded for his highly influential psychiatric research addressing the intersections of mental health, LGBTQ+ rights, minority stress, and the psychosocial impacts of climate change and the COVID-19 pandemic in the Philippines. **Dr. Jake Rom Cadag** of UP Diliman completes the roster, recognized for his transformative work in geography and disaster risk reduction, utilizing participatory mapping to decolonize disaster studies and ensure that children and marginalized communities have a direct voice in climate change adaptation.

NAST Environmental Science Award

The NAST Environmental Science Award recognizes outstanding scientific and technological research works that contribute to environmental protection and conservation.

Laura David, Ph.D. Physical Oceanography

Dr. David is a leading physical oceanographer and Professor at the UP Marine Science Institute, recognized for her two decades of pioneering work in ocean remote sensing and its application to climate change solutions. She heads the Ocean Color and Coastal Oceanography Laboratory (OCCO Lab), focusing on quantitative modeling, remote sensing, and GIS to study ocean-climate-ecosystem interactions. Driven by science communication, she co-developed ARRAS and the internationally patented Fish-I for rapid marine biodiversity assessment, empowering non-experts and contributing to national marine research capacity through programs like RE-INVEST WPS and UPGRADE-CIA. An award-winning scientist and administrator, she has significantly contributed to national marine science policy, education, and community engagement, including developing the "Resilience: Survive and Thrive" game.

Special Citations: Pierangeli Vital and Cecilia Moran

NAST Talent Search for Young Scientist

The NAST Talent Search for Young Scientist is a project of the Academy that encourages young people (must not be more than 35 years old within January to December in the year of the award) to pursue a career in science.

For the NAST Talent Search for Young Scientists, **Dr. Isaiah Paolo A. Lee** of the University of the Philippines Diliman took 1st place. Dr. Lee is highly recognized for his exceptional work in evolutionary genomics and systems biology, utilizing computational modeling to understand horizontal gene transfer, antimicrobial resistance, and bacterial evolution. **Dr. Victor Manuel R. Aricheta**, also from the University of the Philippines Diliman, claimed 2nd place. He is distinguished for his rigorous contributions to pure mathematics, focusing on the modularity, arithmetic of continued fractions, and Ramanujan's functions.

Special Citations: Leilani Dacones, Edgar Clyde Lopez, Ryan Cristian Lintao, Bienson Caesar Narvarte, and Ernesto Paruli III

NAST Award for Outstanding Research in Tropical Medicine

For 2025, the prestigious NAST Award for Outstanding Research in Tropical Medicine was presented to Dr. Pilarita Tongol-Rivera. She was honored for over 30 years of transformative epidemiological research. Her extensive body of work has significantly advanced the country's public health policies and management strategies regarding malaria, zoonotic schistosomiasis, and intestinal parasitic infections across endemic Philippine communities.

Special citations for this category were also awarded to Dr. Cecilia B. Moran and Dr. Pierangelie G. Vital.

Outstanding Book and/or Monograph Award

This award is given annually for outstanding books and/or monographs published in the Philippines by Filipino authors or co-authors within five years preceding the award.

Agricultural Sciences

Fernando, E.S. and Quimado, M.O. (2023). Ultramafic Flora of the Philippines- An Introduction to the Seed Plant Diversity on Philippine Ultramafics. University of the Philippines Los Baños, 274 p.

Raymundo, A. D. 2023. Abaca Virus Diseases: Epidemics and Control. The University of the Philippines Press, E. de los Santos St., UP Campus, Diliman, Quezon City 1101, 286pp.

Biological Sciences

Mallari, N. A., Rosales, R. M., Castillo, G., Delos Angeles, M., Francisco, H., Orbeta, E., Predo, C., Arcenas, A., Balangue, T., Lasmarias, N., Coroza, O., Masigan, J. P., Bautsita, M. A., Edaño, J. W., Jimenez, J. P., Palermo, F., Parr, R. A., Shiraishi, J., Tee, C. K., … Abdao, D. R. (2024). Sukat ng Kalikasan. Department of Environment and Natural Resources.

Ferrera, C.M., San Diego-McGlone, M.L., Santos, M.M., Foronda, J.B., Santiago, J.A., Lagman M.C., Lagumen, M.C., & Gotanco, R.J.R. (2022). Guidebook on coral reef associated organisms collected from Autonomous Reef Monitoring Structures (ARMS) in the Philippines: A tool for capacity building in monitoring biodiversity at selected reef sites in the Philippines. University of the Philippines Marine Science Institute, Volume 1, 221 pp.

Health Sciences

Guevara, A.P., Villaseñor, I., Reyes, M., Dalisay, D., & Alvero, R.G.Y. Tuklas Lunas: A Decade of Research Innovation, and Technology Advancement in Health Products. Philippine Council for Health Research and Development

Social Sciences

Dacudao, Patricia Irene. 2023. Abaca Frontier: The Socioeconomic and Cultural Transformation of Davao, 1898-1941. Quezon City: Ateneo de Manila University Press.

Orbeta, Aniceto, Kris Ann Melad, and Nina Victoria Araos. "Reassessing the Impact of the Pantawid Pamilyang Pilipino Program: Results of the Third Wave Impact Evaluation." Research Paper Series, December 2023. https://doi.org/10.62986/rps2023.06.

Outstanding Scientific Paper Award

This award is given annually for papers published in Philippine scientific or technical journals within five years preceding the award.

Agricultural Sciences

Laborde, G.M.R., Estrada, M.R., Romero, M.V. (2021). Brown Rice Consumption and Changes in the Metabolic Risk Factors of Non-communicable Diseases in Selected Overweight and Obese Filipinos. Philippine Journal of Science, 150 (2): 473–484.

Dela Cruz, J.D. and Flores, F.P. (2020). Evaluation of Physicochemical Characteristics, In Vitro Release and Antioxidant Properties of β-carotene and β-cyclodextrin Inclusion Complexes with Rice as Food Matrix. The Philippine Agricultural Scientist, 103(4): 337-348.

Biological Sciences

Cabral, R.B., Geronimo, R.C., Mamauag, A.S.S., Silva, J.A., Mancao, R.H., & Atrigenio, M.P. (2023). Ensuring Aquatic Food Security in the Philippines. The Philippine Journal of Fisheries, 30(2): 298-313.

Caasi-Lit, M.T., Ocampo, E.T.M., Salazar, A.M., Paril, J.F., Novio, B.V., Panabang, B.B., & Marmeto, A.M.D. (2021). First Detection of Naturally Introgressed Bt Cry1Ab in Asian Corn Borer [Ostrinia furnacalis (Guenee)] - Resistant Traditional Maize (Silangan) in the Philippines. Philippine Agricultural Scientists, 104 (4): 340-350.

Engineering Sciences and Technology

Cadeliña, P. L. P., & Yñiguez, A. T. (2021). Measuring Up to the Challenge: Enhancing the Capacity of ARAICoBeH System by Enabling Coral Colony Size Measurement. Philippine Journal of Science, 150(4).

Migo-Sumagang, M.V. & Promentilla, M.A.B. (2024). A P-graph Approach for Planning Sustainable Rice Straw Management Networks. Philippine Agricultural Scientist, 107 (3): 253-265.

Mathematical and Physical Sciences

Edullantes, B., Concolis, B.M.M., Quilestino-Olario, R., Atup, D.P.D., Cortes, A., & Yñiguez, A.T. (2022). Marine heatwaves and their impacts: Research perspectives in the Philippines. Philippine Journal of Science, 151(5): 1885-1892.

Social Sciences

Conchada, M.I.P., Tiongco, M.M., & Sy, D.H. (2022). Investigating the impact of a conditional cash transfer on adolescent pregnancy: Incidence and health outcomes. DLSU Business & Economics Review, 32 (1): 56–71.

Opiniano, J.M. & Ang, A.P. (2024). Remittance investment climate analysis: Ascertaining the local development potential of overseas remittances in Philippine rural hometowns. Asian and Pacific Migration Journal, 0 (0): 1-29

Department of Science and Technology (DOST) Awards

National Science and Technology Week (NSTW) Awards

The National Science and Technology Week (NSTW) is the annual celebration of the Department of Science and Technology (DOST) that highlights the important contributions of science and technology to national development. During the NSTW, outstanding scientists and technologists are recognized. It also serves as a venue for scientists and researchers to interact with entrepreneurs and businessmen.

The NSTW awards recognize individuals and institutions that have made significant accomplishments and contributions to the generation of knowledge and technologies, utilization of research results and promotion of S&T in the country. NAST PHL handles the awards on behalf of DOST.

Outstanding Research and Development Award (for basic research)
Eduardo A. Quisumbing Medal

The award is given to an individual or group who has made outstanding contributions through basic research. The award was named after National Scientist Eduardo A. Quisumbing, the Father of Philippine Orchidology and a conservationist of the Philippine Herbarium.

- Dr. Andrew D. Montecillo

Outstanding Research and Development Award (for applied research)
Julian A. Banzon Medal

The award is given to an individual or group who has made outstanding contributions through applied research. The award was named after National Scientist Julian A. Banzon, who dedicated a good portion of his life to scientific endeavors and concentrated his attention on coconut.

- Dr. Joseph Q. Basconcillo

Outstanding Technology Commercialization Award
Gregorio Y. Zara Medal

The Outstanding Commercialization Award is given in recognition of the efforts of technology generators and developers whose technologies have been commercialized. The award was named after National Scientist Gregorio Y. Zara, a renowned Filipino engineer and inventor. .

- "A Papaya Revolution: The 'Sinta' Variety's Commercial Triumph" by Violeta N. Villegas, Pablito M. Magdalita, Reynold B. Pimentel, Enrique R. Barile, and Fernando B. Aurigue

- "The Bio-N Technology" by Julieta A. Anarna, Mercedes Umali-Garcia, Domingo R. Holongbayan, Cesinande H. Dela Rosa, Edison S. Abrigo, Fernando B. Cagayat, Jomar F. Hon, Ricky A. Altamira, Marwin C. Sinajon, Noel I. Garcia, Allan D. Barachina, and Leo H. Manipol

Outstanding Science Administrator Award
Dioscoro L. Umali Medal

The Outstanding Science Administrator Award is given in recognition of S&T or R&D administrators who have made significant contributions to science and technology through effective management and implementation of plans and programs. The S&T or R&D administrator may come from the academe, private sector or government. This award was named after National Scientist Dioscoro L. Umali, the father of Philippine plant breeding.

- Dr. Eva Maria C. Cutiongco-de la Paz

DOST Intellectual Property Awards

A total of 144 publications received the International Publication Award (IPA), representing 15 DOST agencies, namely: Advanced Science and Technology Institute (ASTI), Food and Nutrition Research Institute (FNRI), Forest Products Research and Development Institute (FPRDI), Industrial Technology Development Institute (ITDI), Metals Industry Research and Development Center (MIRDC), National Academy of Science and Technology (NAST), National Research Council of the Philippines (NRCP), Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), Philippine Institute of Volcanology and Seismology (PHIVOLCS), Philippine Nuclear Research Institute (PNRI), Philippine Textile Research Institute (PTRI), and Philippine Science High School (PSHS)

Furthermore, there were 5 Granted Patent Registration Award recipients from ASTI, FPRDI, and PNRI, as well as 10 Utility Model Registration Award recipients from FNRI, ITDI, MIRDC, and PTRI.

Magsaysay Future Engineers/Technologists Award

The Magsaysay Future Engineers/Technologists Award is an annual award that aims to recognize outstanding research outputs on engineering and technology at the collegiate level and encourage young Filipino students to pursue a career in science.

1st place - Mr. Ivan Perry M. Cabanayan
2nd place - Ms. Ricja Alyzza Z. Dela Cruz
3rd place - Mr. Kernel Emerson R. Raquel

Special Citations

- Mr. Victore Anand De Guzman
- Ms. Christine Joy A. Bernal
- Mr. Bertrand Michael L. Diola
- Mr. Jose Manuel U. Subido

BENEFITS OF ACADEMICIANS AND NATIONAL SCIENTISTS

Aside from the recognition awards, the Academy also provides incentives, benefits, and privileges to Academicians and National Scientists. These are research fellowship grants, travel and publication assistance, monthly gratuities, among others.

Research Fellowship Grants

RESEARCH FELLOW	PROJECT TITLE AND DESCRIPTION	PERIOD COVERED
Acd. Allan B.I. Bernardo	"Can the Philippine Higher Education Institutions be the Home for High Impact Scientist? Analysis of Filipino and Southeast Asian Representation in the Global List of Top 2% Scientists" The project aims to elucidate information on three key elements of the science production process: 1. The scientists: (a) Compare number of Filipino scientists and higher education insitutions (HEIs) in the top 2% with those from other ASEAN countries from 2020 to 2024; 2. The scientists' publications and scientific outputs: (a) Compare characteristics of the scientific contributions of Filipino and other ASEAN scientists in terms of characteristics of the author contributions, including: scholarly output, citations, citations per publication, h-index, h5-index, outputs in 10% and 25% journal percentiles, international collaboration, and industry collaborations. (b) Compare characteristics of the scientific contributions of the top 1% to the top 2% Filipino and other ASEAN scientists in terms of the author contributions, including: scholarly output, citations, citations per publication, h-index, h5-index, outputs in 10% and 25% citation percentiles, outputs in the 10% and 25% journal percentiles, international collaboration, and industry collaborations. 3. The scientists' university environment: (a) Compare characteristics of the HEI affiliations of the Filipino and other ASEAN scientists in the top 2% in terms of Field Weighted Citation Impact (FWCI), citation counts, citations per publication, h5-index, outputs in 10% citation percentiles, outputs in 10% journal percentiles, international	January 2 to December 31, 2025

	collaboration, and industry collaborations; (b) Compare the higher education development policies of the Philippines and other ASEAN countries in the top 2%.	
Acd. Cristina J. Montiel	Collective Memories of Shared Trauma: Addressing Memories of Traumatic War Evacuations (Bakwit) in Mindanao The project aims to support the peacebuilding process after the peace accord signing; demonstrate a new way of addressing community trauma caused by historical war evacuations or bakwet, and show how intergroup empathy and solidarity between Christians and Muslims can be built through political theater.	January 2 to December 31, 2025
Acd. Reynaldo B. Vea	Microcredentials for accelerated social and economic mobility The project aims to find ways to harness microcredentials to facilitate and accelerate the social and economic mobility of Filipino learners throughout their lifetime. It will situate these microcredentials within the formal Philippine education system and the Philippine Qualifications Framework (PQF).	January 1 to April 30, 2025
Acd. Edward H.M. Wang	Addressing Gaps in Sarcoma Care in a LMIC referencing Global Guidelines and Standards The project aims to: (1) Review the flow of sarcoma care at PGH, from patient presentation to screening to diagnosis to management and surveillance; to identify gaps in this flow of care, utilizing international guidelines as mentioned above; to provide recommendations or solutions and initial steps to improve the referral and management of sarcoma within the hospital; to form, in the process, and maintain a cooperative sarcoma group composed of all disciplines taking care of sarcoma patients in order to facilitate this investigation.	January 1 to April 30, 2025

Acd. Filemon A. Uriarte Jr.	Sustainable Management of QSR Wastes The project aims prepare an authorative reference and learning material - using actual field data and information in the Philippine setting - on the sustainable management of wastes from quick service restaurants (QSRs), which are becoming increasingly ubiquitous and significant sources of environmental pollution and other externalities.	January 1 to August 31, 2025
Acd. Cleofas R. Cervancia	The bio-ecology of red dwarf bee, Apis florea fabricius in the Philippines The project aims to determine the bio-ecology of A. florea, focusing on its recent appearance in the country. The specific objectives are as follows: a) to elucidate the taxonomic status of the red dwarf bee through morphometric analysis, b) to identify the pollen sources utilized by the species through palynology, and c) to characterize their nesting behavior.	January 1 to September 30, 2025
Acd. Evelyn Mae Tecson-Mendoza	Transactions NAST PHL: Publication of Volumes 46 (2024) and 46 (2025) and Digitization and Website Uploading of Volumes 13-22 (1991-2000) The project aims to strengthen the Transactions NAST PHL journal to ensure timely, impactful, and sustained releases of issues and articles. Specifically, it aims to: a) complete processing and publishing papers for Transactions NAST PHL Vol. 46 (2024) and start processing and publishing of papers for Vol. 47 (2025); b) edit, digitize, and upload Volume 13-22 (1991-2000) on the TNP website; and c) complete and submit papers for the accreditation process in SCOPUS.	March 1-December 31, 2025
NS Carmencita D. Padilla	Establishment of a System for a National Birth Defects Surveillance Program (Pilot Phase) The project aims to 1) provide an overview of the status of birth defects in the country; 2) develop a system for diagnosis and referral system for affected newborns to appropriate services in a timely manner; and 3) prepare a policy document for DOH for basis of phased implementation in the country.	March 1 to December 31, 2025

Acd. Rhodora V. Azanza	Incorporation of the PAGTANAW 2050 Vision and Approaches into the Philippine College General Education (GE) and Senior High Science Learning Program The project aims to: 1) in-depth review of relevant senior high school and higher education curriculum and courses to assess the entry/incorporation of major PAGTANAW 2050 vision, values, and approaches; 2) recommend the incorporation of appropriate PAGTANAW 2050 learning materials in existing General Education Course/s in Higher Education, e.g. Science, Technology, and Society (STS and other Science GE courses) and Senior High School Course/s; and 3) Provide guidance to school administrators and teaching staff on strategic planning and implementation of the incorporation of appropriate learnings related to PAGTANAW 2050.	June 1 to December 31, 2025
Acd. Virginia C. Cuevas	Evaluation of the IP Community Management of the Coffee-Cacao Agroforestry Project in Kanwan Negritos Reservation Area (KRNA) The project aims to 1) investigate the IP community management of the communal agroforestry site after the project ended in 2018 to the present; 2) determine how IP families maintained the coffee and cacao trees planted in their individual farm lots after the project ended in 2018 to the present; 3) evaluate the level of success or failure of the community and individual management scheme; 4) identify the barriers that affected the community and individual management schemes over the coffee-cacao-based agriculture of the Ayta IPs; and 5) determine the enabling factors that influenced the community and individual management schemes over the coffee-cacao communal agroforest and individual farm lots in the Ayta community.	July 1 to December 31, 2025

Acd. Asuncion K. Raymundo	Comparative Genetic Analysis of Moko and Bugtok (Banana) Strains of Ralstonia solanacearum and Elucidation of their Genomic Differentiation The project aims to conduct a comparative genomic analysis and elucidate the genomic differentiation of the Moko and Bugtok banana strains of R. solanacearum. Specifically, the project aims to 1) perform whole-genome sequencing of banana strains of R. solanacearum strain(s) using next generation sequencing; 2) assemble and analyze the sequenced genome to identify sequence-level variations and functionally characterize its key genomic features; 3) identify candidate gene functions and associated regulatory mechanisms related to pathogenicity and virulence, and; 4) compare the genomes of sequenced strains with publicly available R. solanacearum strains, elucidating phylogenetic and evolutionary relationships of pathogenicity and virulence among these strains.	July 1 to December 31, 2025
Acd. Reynaldo B. Vea	A book on Naval Architecture - Year 1 The project aims to provide an affordable, modern textbook on Naval Architecture for the use of students of BS NAME (Naval Architecture and Marine Engineering) and as a reference book by the students of BS MarE (Marine Engineering) and BS MT (Marine Transportation)	July 1 to December 31, 2025
Acd. Gisela P. Concepcion	Study of the in vivo anti-tumor activity of the anti-TAG72 (tumor-associated glycoprotein 72) mouse monoclonal antibody CC49 The project aims to 1) purify the high-affinity anti-TAG72 (tumor-associated glycoprotein 72) CC49 mouse monoclonal antibody from a mouse hybridoma cell culture; 2) demonstrate the ability of anti-TAG72 CC49 mouse monoclonal antibody to reduce and/or delay the growth of 4T1 mouse mammary primary tumor in balb-c mice and reduce metastasis to the liver; and, 3) determine the overall toxicity of CC49 antibody therapy on the balb-c mice.	August 1 to December 31, 2025

Travel Assistance

Acd. Jaime C. Montoya	Participation as a speaker at the International Urban Health Summit in Hanover, Germany on 09-11 April 2025
Acd. Cleofas R. Cervancia	Participation as a moderator, presenter, panelist, and judge in the 49th Apimondia International Federation Congress in Copenhagen, Denmark on 25-27 September 2025
NS Carmencita D. Padilla	Participation as a panelist in the 31st International Pediatric Association Congress in Mexico City, Mexico on 08-11 May 2025
Acd. Alvin B. Culaba	Participation to give a plenary lecture at the 2025 Annual Philippine-American Academy of Science and Engineering (PAASE) Meeting and Symposium at the University of South Carolina, Columbia, USA on 19-20 July 2025
Acd. Elmer P. Dadios	Participation at the 2025 Annual Philippine-American Academy of Science and Engineering (PAASE) Meeting and Symposium at the University of South Carolina, Columbia, USA on 19-20 July 2025
Acd. Aura C. Matias	Participation as a speaker at the 3rd Association of Academies and Societies of Sciences in Asia (AASSA)-Women in Science and Engineering (WISE) Symposium in Tokyo, Japan on 04-06 August 2025

LECTURE SERIES AND SYMPOSIUM FOR THE YOUTH

The Dialogue with NAST Scientists is designed for professionals, including researchers, educators, and local government officials, to discuss the critical role of Science, Technology, and Innovation (ST&I) in achieving the Sustainable Development Goals. The program aims to inspire professionals to conduct more research and apply scientific solutions for community development. Through these dialogues, esteemed National Scientists and Academicians share their expertise on pressing national issues such as agricultural biotechnology, climate change resilience, the Fourth Industrial Revolution, global tuberculosis strategies, and the application of machine learning. Conducted in various locations like Batanes, Cebu, and Zamboanga del Norte, the lecture series has successfully equipped local leaders and educators with the knowledge to foster S&T programs, strengthen STEM-related research initiatives, and integrate innovative teaching strategies. Participants highly valued the events and consistently recommended longer open forums and continuous in-person engagements to further maximize collaborative impacts.

The ScienTeach: Symposium for the Youth is an initiative that brings the nation's leading scientists directly to elementary and high school students to spark their interest in pursuing careers in STEM. During these symposiums, scientists share their personal journeys and groundbreaking research on diverse topics, ranging from marine cone snails and microbiology to water resources engineering and plant breeding, highlighting the real-world applications and rewards of scientific work. To keep the youth engaged, the program incorporates interactive open forums where students

can ask technical questions and seek life advice, alongside fun icebreakers like the "#NAMETHATNS" game. Held in multiple provinces including Batanes, South Cotabato, Misamis Occidental, Ilocos Norte, and Zamboanga del Norte, the activity has successfully broadened students' perspectives on research and motivated them toward their academic goals, with participants frequently requesting more symposiums and simpler, engaging presentations tailored to the youth.

FUTURE SCIENCE LEADERS FORUM (FSLF)

The 2023 *Future Science Leaders' Forum (FSLF)* aims to empower young Filipino science leaders, assist them in maximizing their leadership potential in their respective fields, and provide a venue for a leadership network of peers and potential mentors and advisers. It is designed for individuals who are under 40 years old, have a strong aptitude for leadership in their chosen disciplines, and have a track record of exceptional success in those fields. The plenary sessions essentially address various perspectives and best practices from the scientific leaders to build up a progressive Philippines anchored on science.

RESEARCH UPGRADING AND PERFORMANCE EVALUATION (RUPE)

The Research Upgrading and Performance Evaluation (RUPE) program is a capacity-building initiative that aims to strengthen the capability of researchers to implement research projects and produce scientific papers suitable for publication in established international refereed journals. Through a series of training modules and workshops, participants are guided on crucial aspects of the research process, including writing thesis proposals, crafting introductions and methodologies, and navigating the challenges of writing publishable scientific articles. Furthermore, the program strongly emphasizes research integrity by educating participants on ethics in research and publications, as well as how to identify and avoid predatory journals and conferences. Conducted in partnership with DOST Regional Offices across various areas such as the National Capital Region, Leyte, Tagaytay, Cagayan, and Benguet, RUPE provides a solid foundation to elevate the overall research productivity and publication quality of Filipino scientists.

ADVISORY FUNCTION

The Academy plays an integral role as an advisory body on national science, technology, and innovation (ST&I) policy and related matters. It heightens public awareness, understanding, and appreciation of the role that ST&I play in national development.

46th ANNUAL SCIENTIFIC MEETING

The Academy chose "Bioscience Innovations: Transforming Enterprise Ecosystems for Wealth Creation" as the theme for the 47th Annual Scientific Meeting. The Department of Science and Technology (DOST) has built its programs on four key pillars: promoting human well-being, fostering wealth creation, ensuring wealth protection, and driving sustainability. This theme underscores the transformative potential of bioscience in shaping enterprise ecosystems, driving social innovation, and enabling sustainable development. Bioscience serves as a bridge between scientific discovery and community needs, offering transdisciplinary solutions to complex challenges.

Grounded in real-world examples, the meeting focused on how bioscience-based innovations empower communities to address local issues, enhance resilience, and create sustainable, inclusive opportunities. The key focus areas included community-based livelihood innovations to generate sustainable economic opportunities for indigenous and marginalized communities, sustainable resource management and conservation to strike a balance between economic growth and environmental protection, and education and workforce development to build scientific literacy and skills within communities.

Opening Ceremony

Academician Jaime C. Montoya, president of NAST PHL, delivered the welcome remarks. Academician Montoya emphasized the need to harness bioscience for practical but impactful outcomes as the country faces increasingly complex societal and environmental challenges. He further elaborated that bioscience offers innovative solutions that ensure the responsible use of natural resources, agricultural stability, ecosystem protection, and community well-being while balancing economic and environmental goals. Academician Montoya highlighted the goals of the 47th Annual Scientific Meeting (ASM) of scalable and inclusive models that contribute to wealth creation and sustainability, aligning with the commitment of the Department of Science and Technology (DOST) to advancing well-being, fostering wealth creation, and sustainability.

Dr. Renato U. Solidum, Jr., secretary of DOST, delivered the opening remarks. Secretary Solidum highlighted DOST's commitment to providing solutions and opportunities to improve the lives and livelihoods of Filipinos through science, technology, and innovation. Secretary Solidum emphasized how bioscience can provide comprehensive solutions that promote community resilience, environmental responsibility, and economic progress. He further elaborated on DOST initiatives, such as passing the Virology Institute of the Philippines (VIP) Act, developing innovation hubs, and establishing programs such as *Tuklas Lunas*. Secretary Solidum called for stronger linkages among government, academia, the private sector, and communities to ensure bioscience breakthroughs, sustainable wealth for all Filipinos, and to reinforce the nation's competitive edge on the global stage.

Dr. Ivan Marusic, vice president of the Australian Academy of Sciences, delivered the keynote address. Dr. Marusic highlighted how the world is currently facing accelerated impacts from

climate change, biodiversity loss, and emerging diseases. Bioscience can help protect ecosystems, strengthen food security, improve health, and drive inclusive growth. Dr. Marusic emphasized global collaboration, with Australia and the Philippines being a prime example. Dr. Marusic elaborated on how both countries can deepen their research collaboration by engaging and understanding indigenous knowledge systems and practices.

Dr. Marusic discussed programs such as *Seeds of Science Asia* and mentoring initiatives that empower young researchers and policymakers across the region. He added that collaboration can accelerate solutions for shared challenges. He also emphasized that bioscience innovations happen through a network of collaboration that transcends borders and shared interests in resolving common problems. Dr. Marusic concluded with a call to strengthen bioscience innovations through university-industry partnerships, engagement with our local communities, and secure sustained investments. According to him, bioscience opens opportunities, drives scientific innovations, builds sustainable economies, and improves overall well-being.

Academician Windell L. Rivera, chair of the 47th ASM Steering Committee, gave an introduction to the 47th ASM and a brief statement of the objectives. Academician Rivera discussed the transformative role of biosciences in driving social innovation and sustainable development by addressing community needs and promoting inclusive opportunities. He highlighted that the 47th ASM focused on three key areas: community-based livelihood innovations, sustainable resource management, and education and workforce development. The ASM aims to encourage knowledge sharing, assess emerging innovations, and highlight impactful case studies to inspire scalable models across the Philippines.

The Poster Session and Exhibits were officially opened after the ribbon-cutting led by Dr. Renato U. Solidum, Jr., Academician Jaime C. Montoya, and Dr. Ivan Marusic. Afterwards, the program continued with the start of the plenary sessions.

Plenary Sessions

Plenary Session 1

Academician Cleofas R. Cervancia, member of the NAST PHL Biological Sciences Division, presented on the Bee Economy Initiative. The program aims to link biodiversity, biotechnology, and bioenterprise for sustainable community livelihoods. Academician Cervancia highlighted the importance of pollinators to our natural environment. It strengthens and fosters food security and biodiversity resilience. Academician Cervancia highlighted the need for science-based protocols and scientific research to develop valuable products like honey and propolis, supported by research on their chemistry, bioactivity, and therapeutic value. She concluded with the Bee Economy, empowering local indigenous communities and gaining international recognition.

Dr. Deo Florence L. Onda, associate professor at the University of the Philippines Marine Science Institute, posed a question on how bioscience empowers communities and contributes to innovations for progress and growth. Dr. Onda emphasized how Filipino creativity and ingenuity propel bioscience innovations. Dr. Onda highlighted the story of *TalaBoys*, the fisherfolk of Macalelon. The *TalaBoys* of Macalelon's adaptive and innovative solutions, rooted in indigenous knowledge and practices, propelled oyster farming into a sustainable livelihood for the municipality. Dr. Onda concluded that community-based empowerment means owning the technology and expanding it while incorporating indigenous knowledge and practices for lasting and sustainable development.

Plenary Session 2

Mr. Jovy Hernandez, president and chief executive officer at the Metro Pacific Agro Ventures (MPAV), emphasized their mission to foster and strengthen technology-driven, fully integrated, and inclusive agricultural practices. Mr. Hernandez further discussed the company's efforts to revitalize the local dairy industry and spearhead the country's largest greenhouse farming operation. He highlighted that MPAV is guided by the purpose of developing our country's ability to feed our people first. Mr. Hernandez concluded with a call for stronger ties with the public and private sectors to nurture and develop scientific innovations.

Corresponding Member Homer D. Pantua, member of the NAST PHL Biological Sciences Division, discussed the transformative role of biosciences in addressing livestock diseases and contributing to wealth creation in the Philippines. CM Pantua emphasized the effects of zoonotic diseases on the country's food security and national economy. He highlighted the essential need for a deeper understanding of viral evolution and pathogen diversity to strengthen our pandemic preparedness. He concluded with a call for a greater zoonotic disease management rooted in science-based solutions and to collaborate and create meaningful changes.

Plenary Session 3

Corresponding Member Gonzalo C. Serafica, member of the NAST PHL Engineering Sciences and Technology Division, highlighted the importance of building an innovation ecosystem in the country. CM Serafica discussed how, through his experience, he concluded that a five-player model is essential for science-based enterprises to succeed: academia, industry, government, entrepreneurs, and risk capital. He emphasized that without all five actively collaborating, innovations cannot grow and generate economic value. CM Serafica concluded with a call that all stakeholders must address real problems and that research outputs are both scientifically rigorous and market-responsive to turn Filipino scientific innovation into sustainable enterprises.

Mr. Danilo P. Manayaga, president and chief executive officer at the Secure International Corporation, discussed the need for the Philippines to attain sustainable energy security. The country's heavy reliance on imported energy, such as fossil fuels, coal, and liquified natural gas is driving the prices at the local market to skyrocket. Mr. Manayaga emphasized that policies that allow costs to be passed to the consumers are one of the reasons why making energy is unaffordable. Mr. Manayaga proposes a solution using alternative energy sources, such as biogas technology, which utilizes abundant local biomass such as napier grass, banana trunks, corn waste, and rice straw to produce renewable energy. He concluded that science, technology, and innovation offer the tools needed to secure sustainable, renewable energy for the country.

Plenary Session 4

Mr. Philip S. Cruz, president and chief executive officer at Herbanext Laboratories, Incorporated, discussed a sustainable model that incorporates health, livelihood, and environmental sustainability by utilizing the economic potential of the Philippines' abundant medicinal plants. Mr. Cruz expressed the need to collaborate closely with Indigenous Peoples (IP) communities for their sustainable knowledge and practices. He shared his deep connection with the indigenous communities to develop herbal products that are commonly used such as *Banaba.* A sustained partnership between the indigenous communities could further develop and expand to the coastal communities using native herbal trees like the *Bitaog* and *Lumbang.*

Mr. Jan Vincent N. Sollesta, president at Galenx, discussed the challenges of bringing health technologies from the countryside to the mainstream market. Mr. Sollesta highlighted the difficulty of bridging the gap between early adopters and the mainstream, emphasizing that successful innovation requires collaboration between academia and industry. Mr. Sollesta underscored the importance of closing early-stage innovation gaps and increasing government

support for research and development. He called for streamlining regulatory pathways, enhancing accessibility to pre-commercialization, and research and development incentives.

Dr. Romulo J. De Castro, director at the Center for Informatics of the University of San Agustin, discussed the ATIPAN program. A community-based digital health strategy for universal healthcare. It is an initiative providing telemedicine services to indigenous and rural low-income communities in Western Visayas and Negros Occidental. Dr. De Castro advocated for healthcare services to reach the remote, marginalized communities in the Philippines. ATIPAN's success has reached international recognition but it still needs government assistance. He stressed that the solutions must be a bottom-up approach, prioritizing the marginalized first as they are the most in need of aid.

Plenary Session 5

Corresponding Member Rigoberto C. Advincula, member of NAST PHL Mathematical and Physical Sciences Division, presented the transformative potential for research and drug development of integrating artificial intelligence (AI) learning tools into biomedical engineering. CM Advincula stressed the importance of building local knowledge and expertise on biomedical science, technology, and innovations. CM Advincula believes that the future will require AI and machine learning training. He concluded that Science, Technology, and Mathematics (STEM) students and researchers must be equipped with the ability to use these tools effectively through close mentoring.

Dr. Aletta Concepcion T. Yñiguez, professor at the University of the Philippines Marine Science Institute, presented the Philippine Ocean Observation Modeling and service system and how it can be transformed into services for communities and policymakers. Dr. Yñiguez emphasized the need for science-based solutions to support the Philippine Blue Economy. Dr. Yñiguez called for investments in new ocean observation technologies, institutionalized agreements, and repositories for open access of information, and for close collaboration with the end-users to ensure sustainability of the developed technology.

Plenary Session 6

Dr. Clarisse M. Gonzalvo, assistant professor 7 at the Department of Educational Communication of the University of the Philippines Los Baños, highlighted the social dimensions of biotech farming in the Philippines. Dr. Gonzalvo discussed the importance of prioritizing farming cultures to better understand the farmers' decision-making process and behaviors. She elaborated that farmers are not passive beneficiaries. They assess risks, make informed decisions rooted in well-established social, economic, and environmental contexts. She called for empowering farmers through sustained support and recognizing the farmers' agency and social dynamics, as well as closely collaborating with farmers to form solutions that are inclusive and sustainable.

Dr. Sonny Domingo, senior research fellow at the Philippine Institute of Development Studies, presented modern biotechnology and its role in genetically modified (GM) crops such as biotech (Bt) corn, golden rice, and Bt eggplant in improving agricultural productivity, sustainability, and pest resistance. Dr. Domingo highlighted that despite regulatory improvements and legal challenges that halted the commercialization of GM crops in the year 2023 to 2024, There is a critical need to harmonize and strengthen regulatory frameworks, enhance stakeholder engagement, safeguard institutional memory, invest in human capital development, and implement long-term legislative and policy initiatives to address existing concerns and fully develop the potential of biotechnology in advancing national development.

Dr. Ben S. Malayang III, professor emeritus at the Environmental Policy and Governance of Silliman University, discussed how marine conservation is essential in safeguarding the Philippines' economic, socio-cultural, and ecological wealth. Dr. Malayang III emphasized that our coasts and seas are our treasure as an archipelagic nation. It is the foundation of livelihood and wealth for the Filipino people and defines our character as a nation, as well as our economy. Dr. Malayang III reaffirmed that ecological conservation should transcend the boundaries of species protection and encompass the balance of demand and supply of our marine resources. He argued for a holistic perspective in conservation that includes scientific, economic, and social development.

Presentation of Research Results

Dr. Pierangeli G. Vital, 2021 Outstanding Young Scientist Awardee and head of Biological Research and Services Laboratory of the University of the Philippines Diliman, presented her research entitled, "Metagenomic Surveillance of Antimicrobial Resistance Genes (ARGs) in Laguna Lake: A Multi-pathogen Monitoring for Water Quality".

Dr. Vital presented her research on the use of Nanopore sequencing technology to detect antibiotic resistance in Laguna Lake. Antibiotic resistance occurs when bacteria stop responding to medicines, making infections harder to treat. This is a big global health problem that also affects our environment. Dr. Vital developed testing tools that can detect antibiotic resistance faster than traditional lab methods.

Academician Reynaldo B. Vea, member of NAST PHL Engineering Sciences and Technology Division, presented his research entitled "Microcredentials for accelerated social and economic mobility."

Academician Vea presented his research on the potential of microcredentials to accelerate social and economic mobility by providing flexible, skills-based learning aligned with industry needs. Microcredentials can be stand-alone or embedded in degree programs, enabling learners to upskill, reskill, or enter the workforce early and return later for further studies. Academician Vea advocated for the establishment of a national learning framework that promotes continuous skill development and enhances workforce preparedness.

Dr. Betchaida D. Payot, 2020 Outstanding Young Scientist Awardee and assistant professor at the National Institute of Geological Sciences of the University of the Philippines Diliman, presented her research entitled, "Two Ophiolites in Palawan Island: What Their Chemistry and Age Reveal About Their Origins".

Dr. Payot presented her research on the two distinct ophiolites in Palawan and what their age and chemistry reveal about the island's tectonic history. Dr. Payot's team established that the two ophiolites originated from distinct tectonic events. Their current alignment underscores the intricate geological history of Palawan, shaped by processes such as continental rifting, ocean basin formation, and tectonic plate collisions.

Closing Program

Presentation of Status of Past Resolutions and 47th ASM Resolutions

Ms. Luningning Samarita-Domingo, director of the National Academy of Science and Technology (NAST), provided an update on the progress of the resolutions from the 2024 Annual Scientific Meeting (ASM), which centered on transforming the Philippine food system to promote equity, safeguard consumer health, and address environmental challenges. The

resolutions emphasized the need for agrarian reform, more efficient government coordination, increased investment in STEM and civic education, strategic resource management, strengthened healthcare systems, and responsible use of artificial intelligence (AI).

After the 46th ASM, NAST PHL engaged and coordinated with key government agencies to advance the implementation of the adopted resolutions. A regular consultation mechanism was established with the Department of Agriculture (DA) to align scientific recommendations with policy directions, particularly in the areas of food security, while dialogues with the Department of Trade and Industry (DTI) focused on enhancing food supply chains and strengthening inter-agency coordination to bolster local industries and promote an integrated approach to national development anchored in science-based policy.

Academician Rhodora V. Azanza, chair of the 47th ASM Resolutions Committee and member of NAST PHL Biological Sciences Division, emphasized the critical need for bioscience innovations in transforming enterprise ecosystems and contributing to inclusive and sustainable national development. She highlighted key strategies across three main areas: government policy and support, sustainable resource management, and capacity-building. The resolutions urge the government, industry, and academic partners to foster mainstream bioscience into national programs, empower local communities, and invest in research and innovation. NAST PHL is committed to endorsing these resolutions to concerned agencies and developing a monitoring framework for implementation.

Dr. Renato U. Solidum, Jr., secretary of the Department of Science and Technology (DOST), formally accepted the 47th ASM resolutions. Secretary Solidum emphasized their alignment with DOST's mission and strategic pillars of human well-being, wealth creation, wealth protection, and sustainability. Secretary Solidum reaffirmed DOST's commitment to integrating the ASM resolutions into its operational plans and funding priorities. He assured that the department will actively collaborate with other government agencies to ensure the effective implementation and monitoring of these resolutions. Emphasizing that the push for bioscience-driven transformation is a collective responsibility, he highlighted DOST's readiness to lead joint efforts aimed at empowering communities, enhancing industry capabilities, and advancing a more competitive and innovation-led Philippines

Dr. Joseph Capuno, undersecretary of the Department of Economy, Planning, and Development (DepDev), delivered his response on behalf of secretary Arsenio M. Balisacan, Dr. Capuno emphasized the alignment of the 47th ASM's theme with the Philippine Development Plan 2023–2028 and underscored the critical need for innovation, comprehensive transformation in socio-economic sectors, and evidence-based policy backed by strong collaboration among stakeholders. Dr. Capuno recognized the importance of NAST's regional consultations in uncovering innovative local initiatives and bringing attention to systemic issues such as disjointed implementation and limited coordination. He emphasized the need for robust support mechanisms to scale successful grassroots innovations, targeted investments, and the creation of inclusive, enabling policy frameworks.

Presentation of NAST Awards

The recognition program honored individuals and groups for their significant contributions to science and technology. Academician Victor B. Amoroso, Academician Fabian B. Dayrit, Academician Edward H.M. Wang, Academician Rhodora V. Azanza, and National Scientist Raul V. Fabella presented the awards.

Academician Victor B. Amoroso announced the winners of the Best Scientific Posters Competition.

Academician Balmaceda introduced the new Academicians.

RESOLUTIONS

Republic of the Philippines
Department of Science and Technology
NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY

47th ANNUAL SCIENTIFIC MEETING
Theme: *Bioscience Innovations: Transforming Enterprise Ecosystems for Wealth Creation*
09-10 July 2025

RESOLUTIONS

WHEREAS, science, technology, and innovation (ST&I) are enshrined in the 1987 Philippine Constitution as vital to national development and total human well-being; are aligned with the Sustainable Development Goals (SDGs) and the Philippine Development Plan (PDP) 2023–2028 and the different Regional Development Plans; and are operationalized through the Department of Science and Technology's four-pillar strategic framework—Human Well-Being, Wealth Creation, Wealth Protection, and Sustainability—as well as the long-term vision of PAGTANAW 2050;

WHEREAS, the National Academy of Science and Technology adopted the theme "*Bioscience Innovations: Transforming Enterprise Ecosystems for Wealth Creation*" for its 47th Annual Scientific Meeting, to highlight the transformative role of bioscience in promoting social innovation, inclusive growth, and environmental sustainability;

WHEREAS, an enterprise ecosystem refers to a network of different organizations, businesses, and individuals that collaborate and interact to create value and wealth, allowing all participants to benefit from shared knowledge, resources, and opportunities;

WHEREAS, innovation ecosystems thrive when communities are engaged not merely as end-users but as co-creators of knowledge, technologies, and enterprises that are aligned with their aspirations and needs;

WHEREAS, innovation must be directed toward sustainable resource management, striking a balance between economic productivity and environmental stewardship to ensure long-term ecosystem health and resilience;

WHEREAS, the role of the government is vital in creating an enabling environment through policy reforms, investment incentives, public-private coordination, and regulatory support;

NOW, THEREFORE, it is hereby resolved that the government, in partnership with academia, industry, civil society, and local communities accelerate the development and implementation of bioscience solutions in driving social innovation and transforming enterprise ecosystems, including commercialization of such solutions with global market potentials, by adopting the following strategies:

Government Policies and Institutional Support

Lead: Department of Economic Planning and Development, Department of Trade and Industry, Private Sector

- Integrate and harmonize bioscience research and technologies into national policy frameworks and local implementation guidelines;
- Ensure comprehensive science-informed policies across value chain ecosystems;
- Develop innovative communication strategies to increase stakeholders' access to support programs;
- Incentivize public and private sector engagement through fiscal incentives and co-funding schemes that directly improve economic conditions across stakeholders;
- Refine monitoring and evaluation metrics for improved income and quality of life of farmers and fisherfolks;
- Streamline and create clear, efficient, and supportive regulatory frameworks that address local conditions and maintain quality and safety standards, particularly for emerging local bio-based industries;
- Strengthen blue economy industries balanced with the enforcement of coastal and marine environment protection, solid waste management, and other relevant laws; and
- Promote community adoption and ownership of bioscience technologies by ensuring local participation in design, implementation, and validation processes.

Sustainable Resources Management

Lead: Department of Environment and Natural Resources, Department of Agriculture, Private Sector

- Balance the creation of wealth with the conservation and protection of existing resources for future generations;
- Promote citizen science initiatives in community-based resource management to enhance local knowledge and improve environmental monitoring; and
- Promote the use of ecological modeling to guide the restoration of communities to ensure resilient food systems and biodiversity.

Capacity-building

Lead: Department of Science and Technology, Commission on Higher Education, Higher Education Institutions, Private Sector

- Invest in education and capacity-building programs, especially in underserved populations and emerging markets, to empower communities to adopt and benefit from bioscience-driven innovations;
- Promote integration of indigenous knowledge and sustainable practices on bioresource management in formal and non-formal education/curricula;
- Strengthen popular participation in bioscience innovation, especially in roles like infomediaries, to optimize the benefits of digital platforms;

- Enable farmers to access digital technologies that would expose them to price transparency, and foster equitable value distribution across the supply chain;

- Support the amendment of the Dual Citizenship Law to allow individuals with dual citizenship (Philippines & another country) to become regular faculty members/mentors in state universities and colleges, and enable them to participate in the acquisition of research grants; and

- Increase investment in human resource development, research translation, infrastructure, and technology utilization.

RESOLVED FURTHER, that NAST shall endorse these resolutions to the relevant government agencies and the private sectors for mainstreaming these strategies in their work plans and funding programs.

RESOLVED FINALLY, that NAST shall develop a monitoring framework for the implementation of these resolutions.

DONE this 10th of July 2025 in the city of Manila, the Philippines.

SCIENTIFIC POSTERS SESSION

Agricultural Sciences	114
Biological Sciences	53
Engineering Sciences and Technology	39
Health Sciences	34
Mathematical and Physical Sciences	23
Social Sciences	31

Total	**294**

BEST SCIENTIFIC POSTERS

Agricultural Sciences

Synergistic Effects of Biochar and Arbuscular Mycorrhizal Fungi in *Pterocarpus indicus* Willd.: A Cost-Efficient Solution for Greening Mined-Out and Degraded Areas
by Kristel S. Victoria, Lea Joy M. Morong, and Nelly S. Aggangan.

Leveraging Machine Learning for Predicting Indigenous Nitrogen Supply for Optimizing N Use in Rice
by John Bryan Rolloque, Rowena Castillo, Airene Claire Baradas, Benedict Jardinero, Wilfredo Collado, Rodolfo Bermudez, and Kazuki Saito.

Biological Sciences

New Records of Diatom in Laguna de Bay Revealed by High-Throughput Sequencing Metabarcoding and Automated Image Recognition
by Eldrin DLR. Arguelles and John O-Neil V. Geronimo.

Molecular Investigations on the Polypharmacological Mechanisms of Rugulosin A, An Anthraquinone Derived from the Fungal *Endophyte Diaporthe perseae*

by Joe Anthony H. Manzano, Elian Abellanosa, John Cyril Abanto, Lloyd Christian Llames, Beaver Andrei Dayo, Jose Paolo Aguilar, Allan Patrick G. Macabeo, and Nicanor Austriaco.

Engineering Sciences and Technology

Waste Fishbone-derived Hydroxyapatite as a Heterogeneous Catalyst for Biodiesel Production from Waste Cooking Oil
by Noriel P. Alas, Shiena Rose Ascue, Almira Joyce S. Hosmillo, Bernadette D. Jurado, and Rhonalyn V. Maulion.

Development of a Gravity-fed Drip Irrigation System Integrated with Soil Moisture Monitoring for Improvement of Water Use Efficiency
by Ruben James Lim, Ruben Justine Lim, Glen Ventura, Jamie Villafuerte, Justine Rey Macalalad, Sergi Garbanzos, and Marla C. Maniquiz-Redillas.

Health Sciences

Kesong Puti Whey Stimulates Gut Microbiome-driven Growth in a Humanized Mouse Model Reflecting Stunting in Filipino Children
by Ralph V. Ramos, Cherry V. Jimena, Diane T. Manabat, Colleen C. Gonzales, Fidel P. Nayve, Jr., Francisco B. Elegado, Alexis M. Labrador, Alifa N. Santos, Leonardo A. Guevarra, Jr., Ruel C. Nacario, Yong-Chao Su, and Gladys C. Completo.

Pandanus amaryllifolius Roxb. Extracts and Alkaloids Confer Dual-Targeting Mechanistic Effects Against Alzheimer's Disease by Inhibiting Amyloid-Beta Aggregation and Formation of Advanced Glycation End-Products In Vitro and In Silico
by Mario A. Tan, Joe Anthony H. Manzano, Hayato Ishikawa, and Seong Soo A. An.

Mathematical and Physical Sciences

Estimation of the Crude Protein Concentration by Bradford Assay of Locally-Produced Cookies for the Detection of Food Allergens
by Ma. Rachel V. Parcon, Christy S. Daniel, Johanna Andrea C. Valdueza, Aileen C. Bidol, Harlene B. Cardos, Anina Marielle S.J. Medel, Mark Nicholas L. Yow, and Admer Rey C. Dablio.

Dithizone-Modified Paper Sensor Coupled with Smartphone Colorimetry for Cadmium (II) Detection
by Trisha Mae C. Gahol and Alan Rodelle M. Salcedo.

Social Sciences

Mental Health and Psychological Preparedness of Municipal Disaster Risk Reduction and Management Officers in Northern Luzon: A Call for Action
by John Mark Serquina, Wawie DG. Ruiz, and Evelyn F. Acoba.

Economic Value of Conserving Batikuling *(Litsea leytensis Merr.)* Trees on Farms and Forests in Paete, Laguna, and General Nakar, Quezon, Philippines
by Kathreena G. Engay-Gutierrez, Maria Victoria O. Espaldon, Jessica D. Villanueva-Peyraube, Marisa J. Sobremisana, Damasa M. Macandog, and Cristino L. Tiburan, Jr.

REGIONAL SCIENTIFIC MEETINGS

Luzon Regional Scientific Meeting
Alfonso, Cavite; 20-21 May 2025
Focal Persons: National Scientist Raul V. Fabella, National Scientist Carmencita D. Padilla, Academician Allan B.I. Bernardo, Academician Rody G. Sy, Academician Roel R. Suralta, Academician Edward H.M. Hwang, Academician Charlotte M. Chiong, and Ms. Luningning E. Samarita-Domingo
Speakers: Academician Jaime C. Montoya, president, NAST PHL; Dr. Renato U. Solidum, Jr., secretary, Department of Science and Technology; Engr. Sancho A. Maborrang, undersecretary for regional operations, DOST; National Scientist Raul V. Fabella, chair, Social Sciences Division, NAST PHL; Hon. Angelina Tan, governor, Quezon Province; National Scientist Lourdes J. Cruz, member, Mathematical and Physical Sciences Division, NAST PHL; Ms. Judit Alday-Mangmang, business development manager, Batangas Egg Producers Multipurpose Cooperative; Dr. Josefina T. Dizon, professor emeritus, University of the Philippines Los Baños; Mr. Arnel Magsino, support service manager, Sorosoro Ibaba Development Cooperative; Dr. Arnan Araza, post-doctoral researcher, Wageningen University; Dr. Dennis B. Batangan, lecturer, Ateneo School of Government; Dr. Julius Capili, dean, College of Allied Health Sciences, Cagayan State University; Mr. Patrick D. Roquel, founder and director, Binhi Biofarm Company

This regional scientific meeting aimed to facilitate knowledge-sharing and collaborative discussions to develop innovative bioscience-driven strategies that enhance enterprise ecosystems and promote wealth creation in Luzon. Grounded in the theme "Bioscience Innovations: Transforming Enterprise Ecosystems for Wealth Creation," the activity assessed emerging bioscience applications and highlighted successful case studies in community-based livelihood, sustainable resource management, and STEM workforce development. The event successfully underscored the necessity of community-centered solutions, drawing from both cutting-edge science—such as climate-smart digital agriculture—and indigenous knowledge systems, to build climate resilience, bridge inequity in healthcare, and foster inclusive economic growth.

Key Policy Recommendations:

1. Respect the culture and traditions of indigenous peoples by integrating their traditional knowledge into resource management, ensuring that sustainable development is achieved through an interdisciplinary and inclusive approach.

2. Adopt and support circular economy practices in agricultural and rural enterprises, particularly by utilizing byproducts for organic fertilizers, animal feeds, and biomaterials to minimize waste and generate added value.

3. Promote and scale Climate-Smart Agriculture (CSA) strategies, utilizing locally-tailored digital agriculture systems to stabilize crop yields, help aging farmers cope with climate change impacts, and lower greenhouse gas emissions.

4. Bridge healthcare inequity by embracing digital health and telemedicine implementations at the local government level, and explore the cost-effective production of locally-sourced biopharmaceuticals to make critical medicines accessible.

Visayas Regional Scientific Meeting
Iloilo City; 29-30 April 2025

Focal Persons: Academician Arnel N. Del Barrio, Academician Fabian M. Dayrit, Academician Ruben L. Villareal, Academician Maribel G. Nonato, and Academician Rhodora V. Azanza

Speakers and Discussants: Dr. Renato U. Solidum, Jr., secretary, Department of Science and Technology; Engr. Rowen R. Gelonga, regional director, DOST Region VI; Mr. Raymond Patrick L. Cabrera, chief agriculturist, DA-Bureau of Agricultural Research; Ms. November Canieso-Yeo, founder, Plantsville Health; Dr. Carmelo V. Ambut, vice president for research and extension, Iloilo Science and Technology University; Academician Ernesto J. Del Rosario, member, Mathematical and Physical Sciences Division, NAST PHL; Mr. Alfredo A. Pedrosa III, chairman of the board, Seaweed Industry Association of the Philippines; Mr. Cristan Joy M. Campo, senior science research specialist, Marine Fisheries Research and Development Center, DA-NFRDI; Dr. Romulo J. De Castro, director, Center for Informatics, University of San Agustin.

The 2025 Visayas Regional Scientific Meeting aimed to facilitate knowledge-sharing among experts to develop innovative bioscience-driven strategies that enhance enterprise ecosystems and promote wealth creation in the Visayas. It sought to assess emerging bioscience innovations and highlight successful case studies to inspire widespread adoption and scalability across Filipino communities. The event successfully generated actionable resolutions highlighting the critical need for community-based livelihood innovations, sustainable resource management, and science education for workforce development. Key policy recommendations emphasized establishing local processing facilities, improving inter-regional collaboration for natural fibers, and integrating digital telehealth models into Universal Health Care through government reimbursement. Furthermore, participants advocated for increased funding, stronger extension mechanisms, and multi-sectoral partnerships to bridge the gap between research and marginalized communities, ultimately driving inclusive and long-term economic growth.

Mindanao Regional Scientific Meeting
General Santos City and Online
26-27 March 2025
Hosts: DOST Regional Office XII, DOST Regional Offices IX, X, XI, XIII, MOST-BARMM, and NAST PHL

Speakers and Discussants: Acd. Jaime C. Montoya, president, NAST PHL; Dr. Renato U. Solidum, Jr., secretary, Department of Science and Technology; Engr. Sammy P. Malawan, regional director, DOST XII; Ms. Luningning E. Samarita-Domingo, director IV, NAST PHL; Acd. Windell L. Rivera, chair, Biological Sciences Division, NAST PHL; Sec. Leo Tereso A. Magno, chairperson, Mindanao Development Authority; Dr. Richard N. Muallil, 2016 Outstanding Young Scientist Awardee and vice chancellor for research and extension, Mindanao State University - Tawi-Tawi College of Technology and Oceanography; Ms. Olive P. Puentespina, CEO, Davao Thermo Biotech Corporation and Malagos Cheese and Chocolate; Ms. Sheila C. Poonon, associate professor, Central Mindanao University; Dr. Hernando P. Bacosa, 2024 NAST Environmental Science Awardee and associate professor, Mindanao State University - Iligan Institute of Technology; Dr. Remedios S. Flamiano, proprietor, Greenlands Agritech Ventures; Dr. Mariero H. Gawat, S&T fellow II, DOST Caraga; Dr. John Reuel F. Magan, internal medicine-gastroenterologist, Magan Gastroenterology Clinic; Dr. Mylene M. Uy, director, Premier Research Institute of Science and Mathematics, Mindanao State University - Iligan Institute of Technology; Engr. Noel M. Ajoc, regional director, DOST Caraga; Moderators: Acd. Aura C. Matias; Dr. Leodevico L. Ilag, corresponding member, Biological Sciences Division, NAST PHL; Acd. Cleofas R. Cervancia; Acd. Maribel G. Nonato; Rapporteurs: Dr. Leny C. Galvez, scientist I, Philippine Fiber Industry Development Authority;

Dr. Ramon Christian P. Eusebio, 2024 Outstanding Young Scientist Awardee and associate professor 4, Department of Chemical Engineering, University of the Philippines Los Baños; Engr. Karl C. Ondoy, assistant professor, Mindanao State University - Iligan Institute of Technology; Dr. Chitho P. Feliciano, scientist I, Philippine Nuclear Research Institute.

The activity highlighted the critical role of bioscience in promoting community resilience, economic growth, and environmental stewardship across Mindanao under the theme "Bioscience Innovations: Transforming Enterprise Ecosystem for Wealth Creation". Grounded in real-world applications, the meeting facilitated knowledge-sharing among experts and stakeholders to develop innovative strategies addressing challenges in community-based livelihoods, sustainable resource management, and workforce development. Plenary discussions showcased high-value breakthroughs, ranging from community-based marine conservation in Tawi-Tawi and sustainable mushroom enterprise development to innovations in banana tissue culture, advanced meat processing technologies, and utilizing clean solutions like compost and bio-based plastics for waste management and pollution mitigation. Furthermore, discussions extended to health innovations, emphasizing endoscopic advancements and harnessing traditional medicinal plants for community well-being. By assessing these emerging technologies, the meeting successfully yielded resolutions designed to support enterprise ecosystems, unlocking equitable growth and environmental sustainability to inspire scalable and replicable models for the Filipino people.

PAGTANAW 2050

1. *National Training of Trainers on the Development of PAGTANAW 2050, the Philippine ST&I Foresight Indicators*
   Alabang, Muntinlupa City; 10-11 April 2025
   Focal Persons: Academician Glenn B. Gregorio, Dr. Rico C. Ancog, and Ms. Luningning E. Samarita-Domingo
   Speakers: Academician Glenn B. Gregorio, Dr. Rico C. Ancog, Academician Alvin B. Culaba, Ms. Luningning E. Samarita-Domingo, Ms. Guada B. Ramos-Dimaya, and Ms. Maria Theresa B. De Guzman

   This national training aimed to synthesize, review, and refine over 600 science, technology, and innovation (ST&I) foresight indicators aligned with the PAGTANAW 2050 framework. The workshop sought to empower regional directors and planning officers to harmonize existing DOST regional indicators with foresight metrics to effectively track the country's technological and innovation progress. Participants successfully evaluated the indicators, highlighting the absolute necessity to quantify them, assign specific expected actions, and ensure their alignment with regional needs and higher-level strategic frameworks like the Philippine Development Plan.

   Key Policy Recommendations:
   - Monitor final outputs exclusively at the national level while tracking inputs and processes regionally.
   - Explicitly embed nature-based and circular economy solutions into the metrics, while integrating non-S&T indicators to capture broader development goals.

2. *SANDIWA: Building Regional Capacities in Futures Thinking for Indicators Development*
   Muntinlupa City; 23-24 October 2025

Focal Persons: Academician Jaime C. Montoya, Academician Fortunato T. dela Peña, Academician Glenn B. Gregorio, and Academician Rhodora V. Azanza
Speakers: Dr. Kristoffer B. Berse, Dr. Reginal G. Ugaddan, Ms. Priscilla Denise Pigao, Academician William G. Padolina, and Mr. Keith Catalan

This capacity-building workshop aimed to strengthen institutional capacity for long-term, futures-oriented planning by revisiting the assumptions of PAGTANAW 2050 and contextualizing its vision at the operational and sectoral levels. During the workshop, participants crafted narrative-driven futures and evaluated archetype scenarios to develop actionable strategies through backcasting. The participants successfully produced key performance indicators (KPIs) and roadmaps that reflected the development of a new strategic capability across various regions.

Key Policy Recommendations:
- Integrate data systems and promote science-driven governance.
- Break institutional inertia and invest in digital literacy to achieve technological sovereignty and climate resilience.

3. *PAASE Fireside Chat on PAGTANAW 2050 (Fifth Session)*
Online (Zoom and Facebook Live); 24 October 2025
Focal Persons: Dr. Gladys Cherisse J. Completo, Dr. Ramon Christian P. Eusebio, and Dr. Joel P. Ilao
Speakers: Dr. Gladys Cherisse J. Completo, Academician Rhodora V. Azanza, Academician William G. Padolina, Academician Marie Antonette Juinio-Meñez, Dr. Romulo de Castro, Academician Gisela P. Concepcion, Dr. Felicitas L. Lacbawan, Dr. Gregorio E.H. del Pilar, Dr. Edna Estifania A. Co, Dr. Ma. Carmen A. Lagman, Dr. Mariano R. Santo Domingo, and Dr. Leah Tolosa M. Croucher

The culminating fifth session of the fireside chat series aimed to synthesize insights from previous discussions to guide the updating of the PAGTANAW 2050 foresight document. The activity sought to generate actionable recommendations on strategies, methodologies, and emerging technologies responsive to fast-changing national and global realities. Discussions heavily emphasized the need for human-centered development, cultivating the scientific talent pool, and the critical role of scientists in addressing governance continuity and corruption.

Key Policy Recommendations:
- Prioritize poverty-alleviating technologies and adopt circular economy assessments.
- Integrate social sciences into technical planning.
- Develop local capacity for cross-cutting technologies and retain scientific talent through robust mentoring pipelines and adequate infrastructure support.

4. *DOST and NAST PHL Benchmarking Visit to Australian Institutions on ST&I Foresighting and Policy Integration*
Sydney, NSW, and Canberra, ACT, Australia; 03-09 November 2025
Focal Persons: Academician Rhodora V. Azanza, Academician Glenn G. Gregorio, Director Cezar R. Pedraza, and Mr. Dexter Lorma A. Bautista
Speakers: Lynn Allan, Harriet Baillie, Susan Calvert, Ariun Bayarjargal, Dr. Wendy Umberger, Will Hartigan, Erin Denny, and Thomas Quinn

The benchmarking visit aimed to gain critical insights into how Australia's leading scientific, governmental, and academic institutions institutionalize foresight and translate evidence into actionable policy. It sought to build systemic capacity to address long-term national challenges, particularly in the context of integrating PAGTANAW 2050 into the national ST&I foresight landscape. The delegation was successfully exposed to advanced foresight methodologies, such as the Theory of Change approach and structured Scenario Planning.

Key Policy Recommendations:

- Legislate a mandatory, enduring function for long-term insights within the Philippine bureaucracy to insulate strategic planning from political cycles.
- Create a Philippine Centre for Ocean Governance modeled after Australia's ANCORS.
- Pursue joint research proposals focusing on climate change adaptation and coastal ecosystem restoration.

5. *Insights from the Industry: Roundtable Discussion for the External Review of PAGTANAW 2050 Focusing on Critical Influencers and Enablers*
   Quezon City; 17 November 2025
   Focal Person: Academician Fortunato T. de la Peña
   Speakers: Ms. Rosanna Bernadette B. Contreras, Mr. Michael Tiu Lim, Dr. Dennis Alonzo, Mr. Dennis Calvan, Dr. Wilfredo L. Campos, Dr. Orven E. Llantos, Mr. Lumeng Lim, and Dr. Benjamin S. Austria

   This roundtable discussion served as a general assessment of PAGTANAW 2050 by identifying unaddressed issues, determining uncertainties, and consolidating evidence-based insights regarding critical influencers and enablers. It focused deeply on sectors such as Information and Communication Technology (ICT), Blue Economy, Business & Trade, Climate Change, Governance, and Science Education & Talent Retention.

   Key Policy Recommendations:

   - Modernize public school processes through digital transformation and secure venture capital to support local startups.
   - Establish an interoperable data architecture to enhance transparency.
   - Institutionalize academe-LGU-industry partnerships to sustainably manage fisheries and marine resources.

6. *Insights from the Industry: Roundtable Discussion for the External Review of PAGTANAW 2050 Focusing on Food, Nutrition, and Health Systems*
   Quezon City; 21 November 2025
   Focal Persons: Academician Alvin B. Culaba and Academician Fortunato T. de la Peña
   Speakers: Mr. Julius Barcelona, Dr. Dennis B. Batangan, Dr. Raul V. Destura, Dr. Napoleon K. Juanillo, Jr., Mr. Racky D. Doctor, and Dr. Violeta N. Villegas

   This roundtable discussion aimed to assess the PAGTANAW 2050 foresight document by consolidating data-supported insights from industry experts regarding the interconnectedness of Food, Nutrition, and Health Systems. It sought to identify systemic weaknesses, emerging concerns, and necessary technological interventions to address national challenges like malnutrition, agricultural decline, and healthcare access.

Key Policy Recommendations:

- Empower local governments with localized R&D and embed health services into smart community initiatives.
- Strengthen local pharmaceutical manufacturing to reduce import dependence.
- Establish clear, SMART (specific, measurable, attainable, relevant, and time-bound) targets and enforce mandatory nutrition standards to improve overall productivity and well-being.

SPECIAL CONCERNS PROGRAM

The Academy conducted a series of FGDs and RTDs to address critical issues in various sectors, including agriculture, STEM education, research and development, and environmental conservation. These discussions brought together experts from academia, government, and industry to analyze challenges, identify opportunities, and provide recommendations for policy formulation and implementation.

Assessment of Basic Industrial Base of the Philippine Economy

1. *Science-Based and Technology-Supported (SBTS) Enterprises Through Multi-Stakeholder Collaboration: High-Value Agricultural Post-Harvest Processing in the Philippines*
   Lagao, General Santos City, Philippines
   25 March 2025
   Focal Person: CM Gonzalo C. Serafica
   Speakers: Dr. Edward Barlaan, Cacao Research and Development Center, University of Southern Mindanao; Dr. Noel S. Gunay, Metals and Engineering Innovation Center; Ms. Giselle Eve O. Siladan, provincial director, DOST XII - South Cotabato Provincial Office

   This roundtable discussion aimed to identify and engage specific partners to create viable science-based and technology-supported enterprises in high-value agricultural sectors like cacao, coffee, and coconut. Utilizing a stakeholder framework, it sought to bridge the gap between academic research, government agencies, entrepreneurs, and risk capital providers. The event emphasized the transformative role of agricultural manufacturing technologies in reducing post-harvest losses and enhancing product value for global markets. The discussion prioritized critical technological needs, such as localized machinery for drying, automatic extraction for coconut water, and optical sorting machines for coffee. Key policy recommendations included creating a coordinated framework for local seedling procurement to prevent disease, and funding localized processing equipment research via the DOST CRADLE program.

Targeting the Appropriate Technological Maturity of Rural Industries

1. *Discussion on the Status of Technological Maturity in Rural Industries: Assessment of Technologies for the Abalone Industry*
   Iloilo City
   19 August 2025
   Focal Persons: Academician Arnel N. Del Barrio, Dr. Cecilia P. Reyes, and Academician Agnes C. Rola

Speakers: Engr. Rowen R. Gelonga, regional director, Department of Science and Technology Region VI; Academician Arnel N. Del Barrio, member, Agricultural Sciences Division, NAST PHL; Dr. Casiano H. Choresca Jr., scientist I and center chief, National Fisheries Research and Development Institute; Dr. Ma. Junemie Hazel Lebata-Ramos, senior scientist, Southeast Asian Fisheries Development Center; Ms. Marinelle Espino, associate researcher, Southeast Asian Fisheries Development Center; Mr. Cristan Joy M. Campo, senior science research specialist, National Fisheries Research and Development Institution; Dr. Dario A. Cidro, associate professor V, Capiz State University; Academician Agnes C. Rola, member, Social Sciences Division, NAST PHL

This roundtable discussion aimed to gather insights and validate data concerning the adoption of technologies to enhance the supply chain and market competitiveness of the Philippine abalone industry. The activity focused on identifying constraints in the production, processing, storage, and marketing of fresh and processed abalone products for export markets. The discussion highlighted the need for a whole-of-government strategy integrating research, policy reform, community participation, and infrastructure development to address fragmented support and limited investments. Key policy recommendations included establishing a National Abalone Roadmap with dedicated funding, scaling up community-based hatcheries and grow-out farms, and fostering public-private partnerships for feed production strategies. Additionally, the participants resolved to enhance market linkages and conduct extensive information, education, and communication campaigns to fully realize the industry's potential.

Applications of Advanced Technologies in the Delivery of Health Care Services

1. *Roundtable Discussion on Digital Health*
   City of Manila
   25 February 2025
   Focal Persons: Academician Jaime C. Montoya and Dr. Raymond Francis Sarmiento
   Speakers: Ms. Cherrie Esteban, officer-in-charge director III and concurrent chief, eHealth Systems Division, Department of Health; Engr. Marizza Grande, assistant national statistician, Civil Registration Service, Philippine Statistics Authority; Mr. Luisito Cruz, vice president, HL7 Philippines; Ms. Seneriza Castro, country leader, Philips Health Systems

   This roundtable discussion aimed to assess the current state of digital health in the Philippines to achieve a successful health information exchange. It focused heavily on standards of interoperability, health data science education, and the integration of publicly available health registries and databases. The activity underscored the importance of infrastructure investments and human resource training to support widespread digital health adoption towards attaining universal health care. The discussion emphasized the need to align with the Philippine Digital Health Strategy and implement standardized government technologies like the National Health Data Repository. Consequently, interventions focused on establishing expert groups, adopting OpenHIE as an interim architecture, and enforcing technical guidance to overcome system fragmentation.

2. *Roundtable Discussion on Artificial Intelligence in Healthcare*
   City of Manila
   26 February 2025
   Focal Persons: Academician Jaime C. Montoya and Dr. Nathaniel Orillaza Jr.

Speakers: Dr. Iris Isip-Tan, chief, Medical Informatics Unit, University of the Philippines Manila; Dr. Prospero Naval, professor, Department of Computer Science, University of the Philippines Diliman; Dr. Peter Sy, vice president for digital transformation, University of the Philippines; Dr. Alvin Marcelo, chairperson, Standards and Interoperability Lab, University of the Philippines Manila; Mr. Einstein Rojas, board member, Philippine Alliance of Patient Organizations

This discussion examined the technical, ethical, regulatory, and societal factors influencing the adoption of artificial intelligence in the healthcare industry. It aimed to foster multi-stakeholder collaboration to safely incorporate AI into clinical practice, telehealth, and health research while addressing challenges like data privacy and the digital divide. The activity highlighted AI's transformative potential in improving diagnostics, personalized treatments, and resource allocation to ultimately achieve Universal Healthcare. Participants reached a consensus that AI must be implemented with human oversight and prioritized for equitable community-based approaches. Policy recommendations included fine-tuning large language models for Philippine clinical practice, investing in electronic health records, and establishing regulatory pathways that address algorithmic bias.

3. *Roundtable Discussion on Local Medical Technology Product Development and Regulatory Process: Drugs, Devices, and Diagnostics*
   Alabang, Muntinlupa
   21 March 2025
   Focal Persons: Dr. Gonzalo C. Serafica
   Speakers: Ms. Shaira Ingrid Ramirez, science research specialist, Intellectual Property and Technology Management Unit, Philippine Council for Health Research and Development; Engr. Pamela Picazo, head, Policy, Guidelines, and Standards Development Section, Food and Drug Administration; Dr. Benjamin Sablan, Jr., director, National Clinical Trials and Translation Center, University of the Philippines Manila; Dr. Aleli Kraft, vice chairperson, Core Committee, Health Technology Assessment Council; Mr. Richard Simon Binos, health systems and market access manager, Pharmaceutical and Healthcare Association of the Philippines; Dr. Raul Destura, founder and chief executive officer, ManilaHealthTek; Dr. Cecilia Maramba-Lazarte, director, Institute of Herbal Medicine, University of the Philippines Manila; Engr. Voltaire Dupo, assistant professorial lecturer, Electronics and Computer Engineering Department, De La Salle University; Dr. Portia Grace Marcelo, professor, College of Medicine, University of the Philippines Manila; Engr. Jude Sasing, president, Orthopaedic International, Inc.

   This forum aimed to understand the processes and regulatory factors affecting the market approval and access of locally developed health technologies, including drugs, devices, and diagnostics. It sought to identify gaps in the current FDA policy framework and present successful models of local innovation from which to learn. The discussion emphasized fostering collaboration among regulators, the industry, and academia to create a conducive environment for manufacturing safe and effective medical products. The roundtable revealed significant hurdles, such as limited local manufacturing plants, testing laboratories, and the "valley of death" between research and commercialization. Recommendations included providing tax incentives, supporting spin-off companies, improving clinical trial infrastructure, and optimizing the regulatory process to align with international standards.

SPEAKERS BUREAU

Compostela, Davao de Oro; 20 August 2025
Focal Persons: Ms. Mayan Jane J. Inni and Ms. Luningning E. Samarita-Domingo
Speakers: Ms. Mayan Jane J. Inni, Academician Rex Victor O. Cruz, Engr. Richard U. Aquino, Dr. Merdelyn Caasi-Lit, and Ms. Luningning E. Samarita-Domingo

The Speakers Bureau was conducted for local officials and employees in Davao de Oro to discuss the province's significant environmental challenges, particularly its mining industry, watershed management, and biodiversity conservation. The activity aimed to empower policymakers and local communities to make informed, science-based decisions regarding resource management and environmental resilience. The event underscored the critical need for a sustainable framework integrating reforestation, responsible small-scale mining practices under the Minahang Bayan program, and the promotion of bamboo for food security and carbon sequestration. The program ultimately emphasized that caring for the planet is an urgent community, health, and future-generation issue requiring unified, science-driven governance.

Key Policy Recommendations:
Strictly confine mining operations to designated areas with proper permits and mitigate the use of harmful substances like mercury.

Foster collaborative community development initiatives and continuously integrate science-based decision-making into local environmental resilience and resource management policies.

SCIENTIFIC COLLABORATION / LINKAGES FUNCTION

The Academy remains to be a strategic partner in ST&I locally and globally.

Through these scientific linkages, interested scientists may seek grants for scientific and technological undertakings, including fellowships, research grants, study visits, and grants for other collaborative projects from the academies associated with the National Academy of Science and Technology.

SCIENCE ACADEMIES AND SOCIETIES

- Academie des Sciences (French Academy of Sciences)
- German Research Society (Deutsche Forshungsgemeinschaft)
- Indian National Science Academy (INSA)
- Academy of Sciences Malaysia (ASM)
- The Royal Society of London (RSL)
- The Royal Swedish Academy of Sciences
- Turkish Academy of Science (TÛBA)
- US National Academy of Sciences (US NAS)

AFFILIATIONS TO INTERNATIONAL SCIENTIFIC ASSOCIATION

- InterAcademy Partnership (IAP)
- Association of Academies and Societies of Sciences in Asia (AASSA)
    - Women in Science and Engineering (WISE) Committee
- The World Academy of Sciences for the advancement of science in developing countries (TWAS)
- Third World Network of Scientific Organizations (TWNSO)

OTHER LINKAGES

- National Research Foundation of Korea
- Philippine-American Academy of Science and Engineering (PAASE)
- Philippine Association for the Advancement of Science and Technology (PhilAAST)
- The Outstanding Women in Nation's Service (TOWNS) Foundation, Inc.

Some of the activities include:

1. *Workshop on Adapting to Climate Change: Safeguarding Health from Disasters in Southeast Asia*
   Pasay City; 22-23 January 2025
   Focal Persons: Academician Jaime C. Montoya and Professor Mark Jit Speakers: Faye Abigail Tolentino Cruz, Dr. Ronald Law, Dr. Albert Salamanca, Professor S Vittal Katikireddi, Professor Sakiko Kanbara, Lisa Yamasaki, Dr. Julius Hafalla, Victoria Pratt, Dr. Farah Mulyasari, Dr. Faizah Che Ros, Kimberly Fornace, and Dr. Ramon San Pascual

   This workshop, co-organized by NAST PHL and the United Kingdom's Academy of Medical Sciences (AMS), aimed to comprehensively review evidence on climate change adaptation in Southeast Asia to identify critical research gaps. It focused on finding interventions to strengthen climate adaptation initiatives, particularly for nations with vulnerable populations and weak healthcare systems. Through transdisciplinary collaboration with international experts, the activity outlined priority research areas to address imminent public health threats like extreme weather and food insecurity.

Key Policy Recommendations:

- Draft a multisectoral National Health Action Plan with robust monitoring and evaluation, and provide direct input to the National Adaptation Plan.
- Establish a regional summer school in the Philippines for training in health and climate change methods, while continuously upholding health equity and climate justice.

2. *20th Annual Meeting and Scientific Convention*
City of Manila; 08 July 2025 Focal Persons: Dr. Allan N. Soriano Speakers: Dr. Allan N. Soriano, Academician Jaime C. Montoya, National Scientist Lourdes J. Cruz, Dr. Roberto Malaluan, Dr. Francisco Magno, Dr. Laura David, and Dr. Rio John T. Ducusin

Organized by the Outstanding Young Scientists, Inc. (OYSI), this convention aimed to explore the frontiers of Filipino science and technology by showcasing groundbreaking research. The event featured meaningful plenary sessions spanning mathematics, polymers, agriculture, climate change, and SDG localization, highlighting how university-city engagement and knowledge partnerships can catalyze local innovations. The activity culminated in the induction of new OYS awardees and the election of a new set of officers.

Key Policy Recommendations:

- Adopt a collaborative, whole-of-government and whole-of-society approach to embed data, innovation, and equity into the nation's shared development journey.
- Promote the localization of Sustainable Development Goals (SDGs) through university-city engagements, SDG baseline assessments, and the development of digital tools for local government units.

3. *Regional Assessment on Climate Risk and Vulnerabilities (Luzon Cluster 1)*
Orani, Bataan; 05-06 February 2025
Focal Persons: Academician Rex Victor O. Cruz, Ms. Cecilia Oreña-Drilon, and Academician Aura C. Matias Speakers: Dr. Julius Caesar V. Sicat, Sec. Maria Antonia Yulo-Loyzaga, Dr. Renato U. Solidum, Jr., Hon. Angel L. Cruz, Jr., Hon. Daniel R. Fernandez, Dr. Laura T. David, Sec. Robert E.A. Borje, Atty. Romell Antonio O. Cuenca, Ms. Marianna L. Vargas-Morada, Mr. Arvin Yason, National Scientist Lourdes J. Cruz, Academician Fernando P. Siringan, Mayor Leopoldo N. Bataoil, Commissioner Albert P. Dela Cruz, Sr., Ms. Katrina F. Francisco, Mr. Ben Mead, Dr. Pierangeli G. Vital, and Ms. Alicia Morales

Organized in partnership with The Outstanding Women in Nation's Service (TOWNS) Foundation, Inc., this regional assessment aimed to elevate public consciousness regarding climate-related risks and enhance the resilience of vulnerable municipalities in the Ilocos Region and Central Luzon. The workshop provided a vital venue for engaging local stakeholders in sharing science and technology-based responses to environmental hazards like coastal erosion, flooding, and typhoons, ultimately providing guidance for designing integrated, collaborative climate responses.

Key Policy Recommendations:

- Adopt a unified, "ridge-to-reef" watershed approach and harmonize Comprehensive Land Use Plans (CLUP) with sustainable watershed management.

- Foster public-private collaborations to access climate finance mechanisms, such as the People's Survival Fund, and aggressively promote nature-based solutions.

PHILIPPINE SCIENCE HERITAGE CENTER

The Academy was mandated by Republic Act 9107 in 2001 to manage, operate, and maintain the Philippine Science Heritage Center (PSHC) to serve as the main repository of the country's contributions, achievements, and accomplishments in the field of science and technology. Also called *Salinlahi*, which means "Heirloom of a Generation," PSHC has a total of 3,063 sq. m. and occupies the first and second floors of the Science Heritage Building inside the DOST Compound.

It promotes science and technology awareness and engagement in the Philippines through its activities.

1. *Meet Your Scientist (MYS): Frontiers in Veterinary Science*
   Taguig City; 24 January 2025
   Focal Persons: Academician Jaime C. Montoya and Academician Ceferino P. Maala
   Speakers: Dr. Mark Joseph Desamero, Dr. Emmanuel Hernandez, and Ms. Sheryll Lee Sales

   Focusing on agricultural sciences, this program aimed to introduce high school students and teachers to the frontiers of veterinary science and laboratory animal research. It sought to spark early interest in STEM careers by highlighting the career journeys and groundbreaking research of Outstanding Young Scientists. The event successfully engaged students from various science high schools, achieving an "Outstanding" rating by actively encouraging them to pursue agricultural sciences through interactive discussions and the presentation of DOST-SEI scholarship programs.

2. *Salinlahi Symposium Series*
   Compostela, Davao de Oro; 21 August 2025
   Focal Persons: Ms. Mayan Jane J. Inni and Ms. Luningning E. Samarita-Domingo
   Speakers: Ms. Mayan Jane J. Inni, Academician Rex Victor O. Cruz, Dr. Jillian Aira Gabo-Ratio, Dr. Merdelyn Caasi-Lit, Ms. April B. Lepardo, and Ms. Luningning E. Samarita-Domingo

   The Salinlahi Symposium Series aimed to bring leading scientists closer to students and teachers in Davao de Oro to inspire the youth toward careers in science, technology, engineering, and mathematics. Through engaging presentations on watershed management, economic geology, Philippine bamboo, and geological hazards, the activity sought to highlight the real-world applications of science in addressing local environmental challenges. The symposium successfully broadened the students' perspectives on research possibilities and the crucial role of science in building disaster-resilient communities.

SCIENTIFIC CAREER SYSTEM

The Academy was given the task to give technical and administrative support to the Scientific Career System (SCS) by virtue of Executive Order No. 17, series of 2023. SCS is a system of recruitment, career progression, and recognition that rewards scientists rank in the government service to develop a pool of highly qualified and productive scientific personnel. The system is co-implemented by the Civil Service Commission (CSC) and DOST, with the CSC Chairperson and DOST Secretary serving as co-chairs of the Scientific Career Council (SCC).

1. *Scientific Career System Orientation for Finance and Administrative Personnel*
   City of Manila and Online 31 January 2025
   Focal Persons: Ms. Luningning E. Samarita-Domingo Speakers: Dr. Renato U. Solidum, Jr., Ms. Sheila G. Acuña, Ms. Ma. Elisa E. Rivera, Mr. Joshua Dan Ian F. Tayawa, Atty. Shiela O. Valino, Dr. Roel R. Suralta, Dr. Leny C. Galvez, and Dr. Maria Theresa M. Mutia

   This orientation aimed to highlight the vital role of finance and administrative personnel in implementing the SCS and to provide an orientation on the proper administration of benefits and entitlements for career scientists across different agencies. The event underscored the necessity for agencies to establish a Scientific Career Evaluation Committee (SCEC) to screen candidates and foster an enabling environment for research. It successfully clarified the procedures for preventing double compensation while ensuring that conferred scientists receive their mandated incentives accurately and efficiently in accordance with the DOST Magna Carta and DBM regulations.

2. *Scientific Career System Orientation and Mentoring for DOST-ASTI Research Personnel*
   DOST-ASTI Training Room, Diliman, Quezon City and Online; 18 February 2025
   Focal Persons: Ms. Luningning E. Samarita-Domingo Speakers: Dr. Franz A. De Leon, Ms. May C. Cayaban, Dr. Mudjekeewis D. Santos, Dr. Pierangeli G. Vital, Dr. Vallerie Ann I. Samson, Dr. Evelyn B. Gergon, Dr. Merdelyn T. Caasi-Lit, Dr. Rodney H. Perez, and Ms. Fides Marciana Z. Tambalo

   This orientation and mentoring session aimed to enhance the understanding of the Scientific Career System among DOST-ASTI research personnel to encourage their admission and professional growth. The activity provided a comprehensive overview of the system's objectives, application requirements, and the necessity of demonstrating significant scientific productivity within a specialized field. The discussions critically addressed the importance of research ethics and the severe impact of predatory journals on a researcher's credibility and the broader scientific community. The event successfully inspired young researchers to pursue the career scientist track as a rewarding path for both personal advancement and national service.

3. *Scientific Career System Orientation and Mentoring in Northern Mindanao (Region X)*
   Malaybalay City, Bukidnon; 02-03 April 2025
   Focal Persons: Ms. Luningning E. Samarita-Domingo Speakers: Engr. Romela N. Ratilla, Ms. Ritchie Mae L. Guno, Dr. Roel R. Suralta, Atty. Shiela O. Valino, Dr. Pierangeli G. Vital, Dr. Erlinda L. Mari, Dr. Evelyn B. Gergon, Dr. Lucille Elna Parreño-de Guzman, Dr. Casiano H. Choresca Jr., Dr. Vallerie Ann I. Samson, Academician Aura C. Matias, and Dr. Merdelyn T. Caasi-Lit

Organized in collaboration with DOST Region X, this two-day event aimed to promote careers in science and encourage local research personnel to apply to the Scientific Career System. The program sought to enhance researchers' understanding of the system's objectives, evaluation processes, and benefits, including the Magna Carta for S&T personnel. It highlighted the importance of research ethics, building a strong field of specialization, and avoiding predatory journals to maintain research integrity. The activity successfully inspired participants through personal career talks and featured a dedicated group mentoring workshop to guide potential applicants in evaluating their qualifications.

4. *Scientific Career System Orientation and Mentoring in MIMAROPA (Region IV-B)*
   Puerto Princesa City, Palawan; 22-23 October 2025
   Focal Persons: Ms. Luningning E. Samarita-Domingo and Mr. Dexter Lorma A. Bautista
   Speakers: Engr. Jerry B. Mercado, Dr. Roel R. Suralta, Atty. Shiela O. Valino, Dr. Juanito P. Jimenez, Jr., Dr. Maria Corazon A. De Ungria, Ms. Fides Marciana Z. Tambalo, For. Arsenio B. Ella, Dr. Lucille Elna P. de Guzman, Dr. Elmer G. Bautista, Dr. Evelyn B. Gergon, and Dr. Merdelyn T. Caasi-Lit

   This orientation and mentoring activity aimed to encourage local research personnel in the MIMAROPA region to apply to the Scientific Career System to increase the number of conferred career scientists in geographically challenged areas. The activity focused on educating participants about the evaluation process, significant incentives, and the critical role of the Scientific Career Evaluation Committee in building a culture of science. The program effectively emphasized the necessity of upholding research integrity by adhering to national ethical guidelines and carefully vetting publication platforms. Through inspirational career talks and an interactive group mentoring workshop, the event successfully cultivated interest and provided personalized guidance for aspiring scientists.

5. *19th Annual Meeting and Scientific Forum of the Scientific Career System (SCS) and the Philippine Association of Career Scientists, Inc. (PACS)*
   Department of Agriculture-Philippine Rice Research Institute, Muñoz, Nueva Ecija; 13-14 November 2025

   Focal Persons: Dr. Pierangeli G. Vital and Ms. Luningning E. Samarita-Domingo
   Speakers: Academician William G. Padolina, Dr. Reynante L. Ordonio, Academician Cristina J. Montiel, Dr. Persia Ada N. de Yro, Dr. Marcelino Q. Villafuerte II, Academician Elmer P. Dadios, Dr. Danilda D. Hufana-Duran, Dr. Peregrino G. Duran, Dr. Eufrocina P. Atabay, Dr. Edwin C. Atabay, Dr. Mary Jane S. Apines-Amar, Dr. Vallerie Ann I. Samson, and Dr. Erlinda Ganzon-Naret

   The activity aimed to catalyze collaborations for inclusive, science-based development and align the efforts of Career Scientists with the long-term national goals outlined in the PAGTANAW 2050 foresight document. The activity featured expert plenary talks addressing modern agricultural biotechnology, climate resilience, sustainable science, the socio-psychological aspects of technology adoption, and the role of robotics and artificial intelligence in industry. It provided a valuable platform for career scientists to share their research outputs through a poster pitch competition and panel discussions exploring work-life balance among scientist couples. The event successfully strengthened the scientific community network, formulated the 2026 strategic plans for PACS, recognized retired career scientists, and elected the new set of officers for the organization.

GENDER AND DIVERSITY PROGRAM

Through its vision of an inclusive national development, the Academy promotes women empowerment and continues to pursue equal opportunities for women, men, and all genders in all its activities and policy recommendations, propelled by science, technology, and innovation.

Some of the activities include:

1. *Kapehan: Celebrating the Power of Filipino Women in Science*
   City of Manila; 21 March 2025
   Focal Persons: Ms. Luningning E. Samarita-Domingo Speakers: National Scientist Lourdes J. Cruz and National Scientist Dolores A. Ramirez

   This dialogue series aimed to celebrate the contributions of Filipino women in science and promote an inclusive national development agenda in line with the National Women's Month sub-theme, "*Babae sa Lahat ng Sektor Aangat ang Bukas sa Bagong Pilipinas*". The activity featured esteemed National Scientists who shared their personal inspirations, the unique challenges they faced in their scientific journeys as women, and strategies to address gender disparity in the STEM fields. The discussion successfully highlighted that the most significant contribution of science to society is fostering a scientific way of thinking among the populace, and underscored the critical need to enhance scientific literacy among the youth.

2. *EmpowerHer: Design Your Own Woman Activity*
   Taguig City; 20 March 2025

   This internal creative activity was organized for the NAST PHL Secretariat staff to encourage self-reflection, appreciation, and empowerment in celebration of National Women's Month. It provided an opportunity to recognize the profound impact of women in society by allowing participants to artistically showcase their vision of an inspiring woman on canvas. Staff members depicted either the women they aspire to become or those they deeply admire, sharing the unique traits that inspire them. By actively celebrating female empowerment, the event successfully fostered a supportive work environment and boosted team morale.

3. *Women in Science, Engineering, and Research (WISER) Forum*
   General Santos City; 25 March 2025
   Focal Persons: Academician Maribel G. Nonato Speakers: Academician Maribel G. Nonato, Academician Edward H.M. Wang, Academician Aura C. Matias, Academician Roel R. Suralta, Dr. Pierangeli G. Vital, and Academician Arvin C. Diesmos

   This forum aimed to promote the scientific productivity of women in Mindanao, empowering them to become equally qualified for various awards and opportunities in science and technology. The activity addressed critical topics such as building inclusive work environments, managing a return to science after motherhood, and integrating sex and gender considerations into research integrity. Speakers emphasized the importance of providing role models, offering flexible work arrangements, and cultivating girls' participation in STEM from a young age. The event successfully engaged participants, offering practical advice on overcoming career breaks and highlighting the ethical implications of using artificial intelligence in research.

Key Policy Recommendations:

- Establish workplace childcare facilities, review the applicability of maternity leave laws (RA 11210), and provide parental leaves and reorientation upon return for mothers.
- Routinely include sex- and gender-specific research data in scientific studies to boost diversity, inclusivity, and the overall accuracy of scientific discoveries.

4. *Meet Your Scientist (MYS): Women in Science, Engineering, and Research*
   Philippine Science Heritage Center, Taguig City; 28 March 2025
   Focal Persons: Academician Jaime C. Montoya and Academician Agnes C. Rola Speakers: Dr. Jillian Aira S. Gabo-Ratio, Dr. Marla Maniquiz-Redillas, and Ms. Sheryll Lee Sales

   Held in celebration of National Women's Month, this activity aimed to inspire high school students by showcasing the professional journeys of successful women scientists and engineers. It sought to empower the youth to pursue STEM careers by providing practical insights into specialized fields like economic geology and civil engineering. The event highlighted the message that science and engineering are not just for the brilliant, but are accessible to anyone with curiosity, passion, and the drive to make a difference. Evaluators gave the symposium an "Outstanding" general rating, indicating a highly successful engagement that motivated students to build foundational skills and seek mentorship.