

# Researchers urge exploration of PH hot springs and volcanic microorganisms for biotech and pharma applications

The researchers suggest further microbial and natural product (NP) exploration of volcanoes and hot springs - underexplored habitats - that will undoubtedly yield a huge repertoire of novel and biologically active compounds.

Microbial natural products (NPs) have been prominent sources of drugs for a long history, especially for cancer and infectious diseases and hot springs and volcanic environments represent valuable sources of novel natural products (Nps), yet largely untapped and understudied.

Given this, a study on "Bioactive Compounds from Hot Spring and Volcanic Microorganisms," was conducted by a research team from the University of the Philippines Cebu and Adamson University.

There are almost 400 volcanoes located all over the country according to the Philippine Institute of Volcanology and Seismology, about 25 of which are considered

active, and the Philippines is also endowed with many natural hot springs.

The study by the team of Dr. Fleurdeliz Maglangit surveyed the bioactive NPs from hot springs and volcanic microbes from 2006-2022, highlighting their chemical structures and biological potential.

"Microbial pathogens or microorganisms that are capable of producing new ways to combat drug therapy, more rapidly than the introduction of new drugs and drug candidates to the clinical pipeline, that's why new sources of biologically active compounds effective against drug resistant cells are urgently needed," Dr. Maglangit said, one of the researchers.

The threat of antimicrobial resistance (AMR) and superbugs, which are microbial strains that have become resistant to the drugs used to treat them, have continued to rise relentlessly, rendering the current



antibiotics and drugs ineffective for common infections.

AMR is considered the next silent pandemic. According to the World Health Organization, AMR is one of the top 10 biggest threats of the century, causing nearly five million deaths annually and over 1.2 million deaths directly

attributed to AMR.

"Hot springs and volcanic environments have been shown to harbor high microbial biodiversity with unique metabolic profiles, yet they remained untapped and understudied for their production of novel druggable chemical entities," Dr. Maglangit said.

The NPs isolated from hot springs and volcanic microbes represent structural diversity and novelty in comparison to the NPs isolated from terrestrial or marine habitats. The hot spring water temperatures provide favorable conditions for thermophilic microbes to generate a wide array of bioactive metabolites.

Maglangit's team recommended the conduct of more extensive experiments, whether in animal models or human subjects since some of the compounds that have been identified from hot springs and volcanic microbes have only been tested in vitro.

Hot springs have been shown to host a wide variety of heat-tolerating or thermophilic, microorganisms, and among these are the hot springs in Mt. Makiling, Los Baños, Laguna, as well as the Wonder Lake hot springs, also in Laguna, and the two hot springs in Benguet - Badekbek and Dalupirip.

Hot springs are inhabited by heat-loving microorganisms or thermophiles that can thrive at high temperatures. The diversity of these organisms has been mainly attributed to temperature. Other factors include pH,

dissolved hydrogen sulfide levels, biogeography, and geological history.

Thermophiles have attracted significant interest in recent years for their production of heat-stable enzymes for biotechnological applications including industrial, agriculture, and medical processes.

Maglangit's team recommended the conduct of more extensive experiments, whether in animal models or human subjects since some of the compounds that have been identified from hot springs and volcanic microbes have only been tested in vitro.

Hot springs have been shown to host a wide variety of heat-tolerating or thermophilic, microorganisms, and among these are the hot springs in Mt. Makiling, Los Baños, Laguna, as well as the Wonder Lake hot springs, also in Laguna, and the two hot springs in Benguet - Badekbek and Dalupirip.

Hot springs are inhabited by heat-loving microorganisms or thermophiles that can thrive at high temperatures. The diversity of these organisms has been mainly attributed to temperature. Other factors include pH,



Collection of soil and water samples in Mainit Hot Springs in Brgy. Montañeza, Malabuyoc, Cebu



**SUNDAY TRIBUNE**  
NEWS PUBLISHING  
VOLUME I • NO. 45 • JUNE 11 - 17, 2023 • 10.00

# SUNDAY TRIBUNE

NEWS PUBLISHING

VOLUME I • NO. 45

JUNE 11 - 17, 2023

10.00

# Super health center to rise in Tanza, Cavite

**TANZA, Cavite (PIA)** – The Department of Health-Center for Health Development (DOH-CHD) Calabarzon broke ground on Thursday, June 1, for its super health center in Barangay Daang Amaya, Tanza, Cavite.

DOH Calabarzon Regional Director Ariel Valencia and Tanza Mayor Yuri Pacumio led the groundbreaking ceremony of the P11.2 million-health facility funded under the agency's Health Facility Enhancement Program (HFEP).

One of the banner programs of the DOH, the HFEP assists local government units (LGUs) across the country to rehabilitate and put up Rural Health Units, Level 1 and 2 Hospitals, and even Apex Hospitals to provide the community's medical needs.

Valencia said the super rural health center is also part of the continuous implementation of the Universal Health Care (UHC) Law which enables LGUs to provide medical services that the community and its neighboring areas need.

The Tanza super rural health center would strengthen the health referral system in the municipality and accommodate more Tanzeños needing health services, according to the regional health chief.

Initiated by the municipal government, Valencia said the center's construction is expected to be completed in six months or before the year ends.

Designed to provide basic and specialized health services, the Tanza center will include an outpatient department, laboratory, X-ray, ultrasound, birthing services, diagnostic, pharmacy, and emergency services. **(PB/ DOH CALABARZON CMU)**



## PBBM invites public to visit Malacañang heritage structures

President Ferdinand R. Marcos Jr. on Tuesday invited the public to visit the Malacañang heritage structures and catch a glimpse of the country's history.

The President and First Lady Liza Araneta-Marcos, together with their son, Simon, opened the historical structures inside the Palace complex in Manila.

Among those opened by the First Family were the Bahay Ugnayan Museum, the Goldenberg Mansion and the Teus Mansion. It is the first time the three structures are being opened to the public.

"It is now open to the public. I invite everyone to come in there. Puntahan ninyo, lalo na 'yung ating mga estudyante na nais

makita ang lahat ng mga pangulo ng ating Republika ay nandiyan lahat. Nandiyan 'yung kaunting kuwento ng kanilang buhay at ngayon ay officially open na and that is why I am inviting everyone to come," the President said as he met his supporters and members of the Malacañang Press Corps (MPC) at the Goldenberg Mansion.

"If you are in this part of the city, come and visit. It's very educational definitely. It's free by the way. We don't charge an entrance fee, so come one and come all and I think that you will find it very, very interesting."

The President described the Goldenberg Mansion as a "very beautiful old house" bought by his mother, former first lady Imelda Marcos. It

was used as a guest house for some formal functions.

The Teus Mansion, on the other hand, was bought after the Goldenberg Mansion, and turned into a Presidential Museum.

"It is a museum of all the presidents of the Philippines, with a short description of the circumstances that brought them to power and some of the achievements that they had during their time as president," Marcos explained.

Spearheaded by First Lady Liza Araneta-Marcos, the Malacañang Heritage Tours aims to preserve the remarkable contributions of past Philippine presidents to nation building. It is a must-see attraction featuring heritage museums that

provide visitors with a greater appreciation for the country's past and distinguished leaders.

The Bahay Ugnayan Museum offers a glimpse into the life and times of President Marcos where visitors can journey through his formative years, observe the key events that defined his tenure, and marvel at the campaign materials that paved the way for his ascent to the presidency.

Built by the Eugsters, a Spanish merchant family in the last quarter of the 19th century, the Goldenberg Mansion served as the home and headquarters of US Military Governor Arthur Macarthur Jr., father of General Douglas Macarthur.

► **PBBM INVITES** • 2

# Medical Mission in Narra III, Silang

A successful medical mission took place in Brgy. Narra III, Silang, Cavite spearheaded by the provincial government of Cavite through the Office of the Provincial Governor-Extension and the Provincial Health Office. The event provided accessible healthcare services to 298 beneficiaries, who received free medical consultation, maintenance medicines and vitamin C supplements.

The GEAMH medical team comprised by Dr. Mary April Jean B. Juanito and John Joseph A. Martal, alongside the Carsigma Team, led by Dr. Dr. Minerva Nieto, rendered free medical consultation to patients during the mission.

Aside from the consultations, the medical mission also rendered other services including free HIV testing, free condoms and lubricants.

Screening and antigen swab testing of selected patients were done prior to consultation.

Barangay Chairman Benjamin M. Marcha Jr., and the dedicated barangay officials, Barangay Health Workers and volunteers contributed to the success of the activity. They conveyed their gratitude to the provincial government for carrying out the services to their community. ---PICAD



## PBBM invites... from page 1

After the war, it was bought by cosmetics manufacturer Michael Goldenberg and was restored by Filipino architect Leandro Locsin in 1975. The mansion was used as a guest house to receive guests and visiting dignitaries of the late President Ferdinand E. Marcos Sr.

The Teus Mansion, on the other hand, is a stately showcase of the vibrant and diverse history of Philippine presidents, housing a vast collection of priceless memorabilia, including presidential attire, footwear, flags, and busts sculpted in the likeness of the former leaders.

Also on display are portraits of the former First Ladies and First Lady Liza Araneta-Marcos herself.

The Malacañang Heritage Tours are open to the public, free of charge. Guided tours are available to explore this fascinating journey through time, starting 1 June 2023, from 9am to 4pm. For those who would like to avail of a guided tour, reservations can be made by emailing [sosec@malacanang.gov.ph](mailto:sosec@malacanang.gov.ph) or by calling (02) 8735-6080. The tour organizers may also be reached through Facebook. | PND

## Researchers... from P4

Incidentally, the same research team is currently involved in a research project with Mainit Hot Springs located in Brgy. Montañeza, Malabuyoc, Cebu as the area of interest. Project ISAAC (Isolation, Screening, and Antimicrobial Activity of Compounds from Actinobacteria) aims to isolate, screen, and characterize thermophilic

Actinobacteria for the production of bioactive compounds with the potential for drug development. To date, several thermophilic strains were isolated from Mainit Hot Springs with remarkable bioactivities against Gram-positive pathogens including *Staphylococcus aureus* and *Bacillus subtilis* compared with gentamicin or oxytetracycline

antibiotic control. Isolation and characterization of the bioactive compounds are currently underway in their laboratories.

The microbial species and chemical diversity in hot springs and volcanic habitats are indeed indicative of future exploration. These novel microorganisms will also likely produce novel druggable molecules.

The research is funded by the Department of Science and Technology-

National Research Council of the Philippines (DOST-NRCP).

The full report on this research will appear in the Philippine Journal of Science (PJS), the oldest science journal in the country on June 2023 issue. PJS is published by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII). (Geraldine Bulaon-Ducusin, S&T Media Service)



# U.S. Announces Php20 Million in Grants to Support Out-of-School Youth in the Philippines

Manila— On May 30, the United States government, through the U.S. Agency for International Development (USAID), announced new grants worth over Php20 million (\$370,000) for Philippine higher education institutions (HEIs) working on innovative programs to improve the lives of Filipino out-of-school youth.

Administered through the USAID Opportunity 2.0 program, the announcement includes two types of grants: the "O2 GAIN Grants," which will address local development priorities for out-of-school youth, and the "O2-ASPIRE Grants," which will support partnerships between Philippine and U.S. HEIs on out-of-school youth advancement. The grants will help fund academic research, develop technological solutions, and enhance the quality of services for out-of-school youth.

USAID Mission Director Ryan Washburn announced the new grants during the Opportunity 2.0 program's Higher Education Learning Summit in Quezon City, which brought together more than 200 USAID partners from across the Philippines. The summit highlighted the pivotal role of higher education partners in building a better future for out-of-school youth and provided stakeholders a space for further collaboration.

"Working together, we have been able to make progress and open doors for thousands of out-of-school youth to better education, employment, and entrepreneurship opportunities," said Director Washburn.



**DIHS Student visitors with Korean guest students.** On May 31, 2023, students of Dasmariñas Integrated High School (DIHS) together with Korean guest students visited Cavite Provincial Capitol as part of their Culture Exchange Program. The visit aimed to facilitate the development of relationships among the students while they learn together, and further strengthen their partnership in the Adopt a School Program of DIHS.

A guided tour of the Cavite Provincial Government offices led by Mr. Jesus I. Barerra together with the staff of the Office of the Provincial Tourism Officer highlighted the visit. The students were given an exclusive glimpse into the inner workings of local administration and the role of government officials in shaping the province's development. They observed firsthand how various departments collaborate to meet the needs of the community. ---PICAD



**PGC Santacruzán 2023.** On May 31, 2023, employees of the Provincial Government of Cavite witnessed with much anticipation, the annual Santacruzán spearheaded by the PGC-QMS Workplace Organization Committee – a tradition which has been celebrated by the PGC every month of May.

Highlight of the Santacruzán is the grand procession of muses from different offices representing biblical Queens and their attributes. Afterwards, a simple ceremony to pay tribute to the Virgin Mary was done at the capitol grounds, where flowers were presented as an offering.

Ms Yolanda Manganaan of the Office of the Provincial Governor was the Hermana Mayor 2023 while Ms. Luzviminda Amparo of the Office of the General Services Officer will be the Hermana Mayor for next year.

In the province of Cavite, the Santacruzán remains a cherished event that not only pays tribute to its rich cultural heritage but also showcases the beauty and resilience of its people. --- PICAD

**SUNDAY TRIBUNE**  
NEWS PUBLISHING

**EDITORIAL BOARD**  
ARNEL P. REYES  
Publisher/Editor-in-Chief  
JR BEJASA  
Layout Artist

Sunday Tribune News Publishing is a weekly newspaper of general circulation in the Province of Cavite with Editorial and Business address at 155 Brgy. Panamitan Kawit, Cavite 4104  
CP No. 0917-109-1919  
E-Mail Add: [sundaytribunenewsublishing@gmail.com](mailto:sundaytribunenewsublishing@gmail.com)

**SUBSCRIPTION RATE**  
1 Month ..... P40.00    6 Months ..... P240.00  
3 Months ..... P120.00    One Year ..... P480.00

**ADVERTISING RATE**  
Commercial — P200/col.cm

**NOTE: All news articles and opinions expressed by the writers are entirely their own and do not reflect the opinion of the Publisher, Management of this Publication.**