

# FNRI eDIGEST

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Food and Nutrition Research Institute



DOST-FNRI

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April - June 2023

## **DOST-FNRI and Taipei Medical University collaborate; partnership ushered with a webinar on non-nutritive sweeteners**

✍ JSNacis, Science Research Specialist II, NFRDD

Dr. Yang Ching Chen, a physician-scientist at Taipei Medical University visited the DOST- FNRI on May 8-9, 2023, to discuss and finalize the joint Manila Economic and Cultural Office – Taipei Economic and Cultural Office (MECO-TECO) research proposal.

Included in the two-day research visit is a benchmarking of available technologies at the DOST-FNRI through a laboratory tour.

The proposed joint research project will integrate the study of the genes (genome), metabolites (metabolome), and intestinal microbes (microbiome) to understand the link between dietary sugars and sweeteners and childhood obesity. The project envisions a cross-country genome-wide association study (GWAS) on the consumption of sugars and sweeteners among Filipino and Taiwanese adolescents.

The research also aims to identify pathways of metabolism related to the intake of added sugars and sweeteners that may contribute to unhealthy weight gain among children and adolescents. Such insights, at the molecular level, can lead to the creation of obesity risk prediction systems that can be used by both countries.

Significant contributions to enhance the existing national policies on sugary



and sweetened foods and beverages are among the long-term goals of the collaborative project.

*Introductory webinar on sweeteners and premature adolescence*

A webinar on “Non-nutritive sweeteners and precocious puberty” was held

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# Director's Message



A fete of events inspired the second quarter with DOST-FNRI Seminar Series (FSS), the Institute's Anniversary celebration, and the Nutrition Month. These happenings were spread throughout the month of July. The presentation of the Institute's latest studies and technologies for optimum diet for all Filipinos has been officiated in person on July 5-6, 2023 at the Dusit Thani Hotel Manila, Makati City.

Interactive projects and activities are also featured in the photo news section and informative articles on overweight and obesity among Filipino teens, food security, and food labels are also included.

One of the highlights of this quarter is the two-day research visit to DOST-FNRI of Dr. Yang Ching Chen, a physician-scientist of Taipei Medical University, to discuss and finalize a joint research proposal that aims at identifying pathways of metabolism related to consumption of added sugars and sweeteners that may contribute to unhealthy weight gain among children and adolescents.

It is also during this quarter that Dr. Victor Owino, a nutrition specialist from the International Atomic Energy Agency (IAEA), concluded a highly productive three-day midterm review mission in the country. The mission assessed the progress and

requirements of an ongoing IAEA Technical Cooperation (TC) project.

On top of this, the DOST-FNRI also conducted the Training on Pandemic-Proof Projects (3Ps) Learnings to capacitate and build more flexibility among DOST employees during project implementations in the Now Normal. This is the Institute's third among the four capacity-building trainings funded by the DOST Human Resource Development Program (HRDP) for DOST personnel from attached agencies and the regional and provincial offices.

Indeed, this is a busy yet productive period for the Institute in implementing R&D and S&T projects and activities.

With all these undertakings in the second quarter, we are excited for the forthcoming activities in the third quarter and onwards to continuously deliver timely and accurate data and information.

*Mabuhay!*

  
**IMELDA ANGELES-AGDEPPA, Ph.D.**  
Director IV and Scientist IV

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# News Flash

## Safeguarding child nutrition in the Philippines: IAEA Midterm Review Mission ignites strategic enhancements and collaboration

✍ AFPBaquiran, Senior Science Research Specialist, NFRDD



Dr. Victor Owino, a nutrition specialist from the International Atomic Energy Agency (IAEA), recently concluded a highly productive midterm review mission, which took place on June 6-8, 2023 in the country. The mission aimed at assessing the progress and requirements of the ongoing IAEA Technical Cooperation (TC) project, “Establishing the Association between Environmental Enteric Dysfunction and Linear Growth and Nutritional Status in Filipino Children Below Five Years”. The three-day visit also facilitated valuable engagements with key stakeholders.

Dr. Owino was formally welcomed by Dr. Imelda Angeles-Agdeppa, DOST-FNRI Director IV and Scientist IV, Ms. Rosemarie Dumag, Chief Science Research Specialist (SRS) of the Nutrition and Food Research & Development Division (NFRDD), and the DOST-FNRI project team led by Ms. Amster Fei Baquiran during his first day of visit to DOST-FNRI. The day began with an insightful discussion on the project’s progress, followed by a comprehensive tour of DOST-FNRI facilities.

Together with the DOST-FNRI project team, Dr. Owino proceeded to the DOST-Philippine Nuclear Research Institute (DOST-PNRI). The DOST-PNRI is the IAEA’s national authority responsible for defining the priority development needs and interests to be supported by the Agency through TC activities. Dr. Owino participated in a facility tour and engaged in a constructive dinner meeting with Dr. Valerie Ann Samson, DOST-PNRI Deputy Director, and Ms. Ana Elena Conjares, Chief SRS of Technology Diffusion Division of DOST-PNRI and IAEA National Liaison Officer (NLO). The NLO serves as the primary contact person for matters related to IAEA in the country, facilitating effective communication and collaboration.

The second day of the mission focused on stakeholder interactions. Dr. Owino and the DOST-FNRI project team held separate meetings with representatives from the National Nutrition Council (NNC) and UNICEF Philippines.

On the final day of the visit, the project work plan underwent a comprehensive

review and update. As the assigned Technical Officer for the TC project, Dr. Owino provided essential guidance on the necessary next steps to propel the project forward, taking into account the valuable insights and recommendations derived from the stakeholders’ meetings.

*Unlocking the power of nuclear techniques for better nutrition: NFRDD’s Thursday Class opens*

On June 8, 2023, this year’s inaugural Thursday Class with NFRDD was held with an insightful lecture on “Tackling nutritional challenges in the 21st century: how nuclear techniques help?” delivered by Dr. Owino. Hosted by the Nutritional Biochemistry Section, the webinar brought together 82 participants from DOST-FNRI and DOST-PNRI.

Dr. Owino’s presentation commenced with an introduction of the IAEA, emphasizing its mission to support Member States in employing safe and non-invasive stable isotopes and related nuclear techniques. These techniques

➔ 12

# DOST-FNRI Conducts DOST-wide Training on Pandemic-Proof Projects (3Ps)

✍️, SFQArevalo, Science Research Specialist II, TDSTSD



*“Make the most of the opportunities that are available, and more importantly, let us invest in future-proofing our projects to minimize impacts, and to encourage innovation and technological adaptation.”* This was one of the take away messages from DOST Secretary Renato U. Solidum, Jr.’s inspirational message during the two-and-a-half-day Training on Pandemic-Proof Projects (3Ps) Learnings on April 18-20, 2023 at the Eurotel Makati Hotel.

Funded and supported by the DOST-Human Resource Development Program (DOST HRDP), DOST-FNRI spearheaded the event to capacitate and build more flexibility among DOST employees during their project implementations in the now normal. The Institute believes that by recognizing the encountered challenges and learning experiences from the past implemented projects, this can make future project implementations more resilient and pandemic-proof, hence,

yielding better results.

Dr. Imelda Angeles-Agdeppa, Director IV and Scientist IV warmly welcomed the 55 participants from different DOST regional offices and attached agencies who attended the training. Aside from Secretary Solidum’s inspirational message, USec. Sancho A. Mabborang, DOST Undersecretary for Regional Operations, also gave his message of encouragement. On the other hand, Dr. Leah J. Buendia, DOST Undersecretary for Research and Development, graced the event by giving her message of support in person.

Professor Mayo Grace C. Amit, Assistant Professor V of University of the Philippines – Los Baños, presented topics on project planning and the development agenda, project development for impact results-based management and evaluation, and sustainability strategies in project management. This was followed by

the presentation of mechanics for the first workshop.

On the second day, the participants presented their outputs which were critiqued by Professor Amit. The participants were divided into 6 groups, composed of 6-8 members. Topics presented focused on project implementation, monitoring and evaluation, planning, and sustainability. Through sharing of experiences and strategies, these learnings can make the participants’ future project proposals more resilient. In the afternoon session, Mr. Nicolai “Nico” V. Reyes, Vice President of Rebel Marketing, presented the topic “Applying Marketing Principles to Promote Popularization and Commercialization of DOST’s Projects and Researches” wherein he gave tips and suggestions on trends, marketing hacks, and pitch hacks or decks to enhance project promotion efforts.

# Writers Pool Corner

## Overweight, obese Pinoy teens more prone to diseases

✍ FJPBatallantes, Project Technical Assistant II, TDSTSD



Unregulated food intake can affect Body Mass Index (BMI), which may lead to obesity and overweight even among Filipino teenagers.

This is according to a policy statement on “FAT (Fad and Trending)!: Adolescent Obesity”, which is based on the 2021 Expanded National Nutrition Survey (ENNS) of the Department of Science and Technology – Food and Nutrition Research Institute (DOST-FNRI).

Further studies reported that obese teens are at risk of developing metabolic syndrome.

According to Cua in 2012, metabolic syndrome is a cluster of conditions occurring together, increasing the risk of having non-communicable diseases or NCDs.

Moreover, the study of Cua in 2012 showed that the prevalence of metabolic syndrome in overweight and obese Filipino teens was 19% or 67 out of 350 study participants.

On the other hand, the study led by Lusica in 2022 revealed that 52% of older Filipinos have metabolic syndrome and have a high prevalence of cardiovascular risk factors.

According to the WHO, obese teens are more likely to develop NCDs, which account for more than half of all deaths in the Philippines yearly.

Hence, NCDs are now the leading killers in the country.

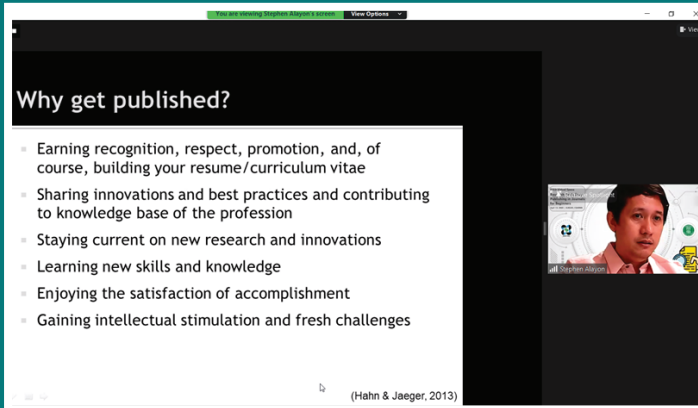
The Department of Health’s National Nutrition Council (DOH-NNC) continues to strengthen campaigns to

increase awareness on the importance of a healthy diet as the foundation of good health and making it a habit.

The DOST-FNRI recommends maintaining good health and preventing obesity through proper diet and regular moderate physical activity to achieve normal body weight.

Moreover, to help prevent lifestyle-related NCDs, the DOST-FNRI also recommends being physically active, eating healthy foods, managing stress, avoiding both alcoholic beverages, and smoking. ■

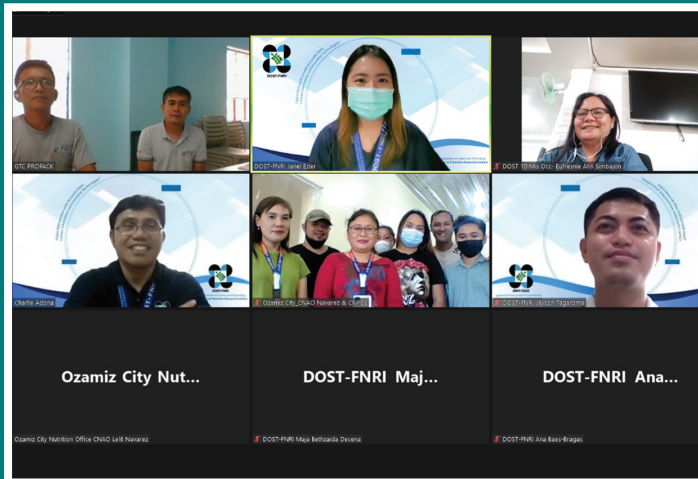
# Photo News



Mr. Stephen B. Alayon, Associate Professor IV of West Visayas State University (WVSU) during the webinar on "Thursday Class cum FIRSt Virtual Space: Publishing in Journals for Beginners", April 13, 2023, via Zoom



Mr. Richard L. Alcaraz during his interview on Usapang Bayan - Episode 13 about Coco Dairy Blend, April 17, 2023, via BSC Multimedia Services Facebook live



Virtual Meeting with LGU-Ozamiz, Misamis Occidental, GTC Propack Corp., PSTO Misamis Occidental and DOST-FNRI Experts, April 25, 2023, via Zoom



Briefing-Orientation on DOST-FNRI Services for Philippine Science High School (PSHS) Ilocos Campus, April 27, 2023, DOST-FNRI Auditorium



Mr. Justin Harold A. Hingco, Bangko Sentral ng Pilipinas Records Officer III, shared his knowledge during the NUTRINET Zoominar #4: Records and Archives Management (Traditional and Digital), May 12, 2023, via Zoom



Launch of Fruits and Vegetables for Sustainable Healthy Diets (FRESH), May 16, 2023, Conrad Manila, Pasay City



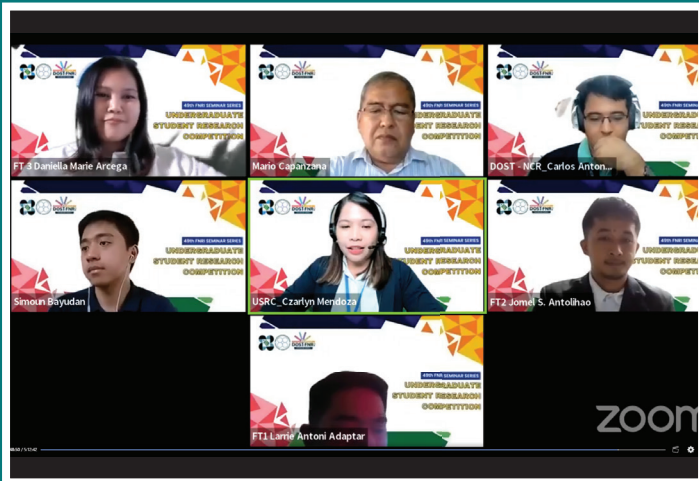
Training-Workshop on Disseminating S&T information through Science Communication Approaches, May 16-18, 2023, Manila Grand Opera Hotel, Manila City



Meal Management and Safe Food Handling Seminar, May 25, 2023, Philippine National Police Academy, Silang, Cavite



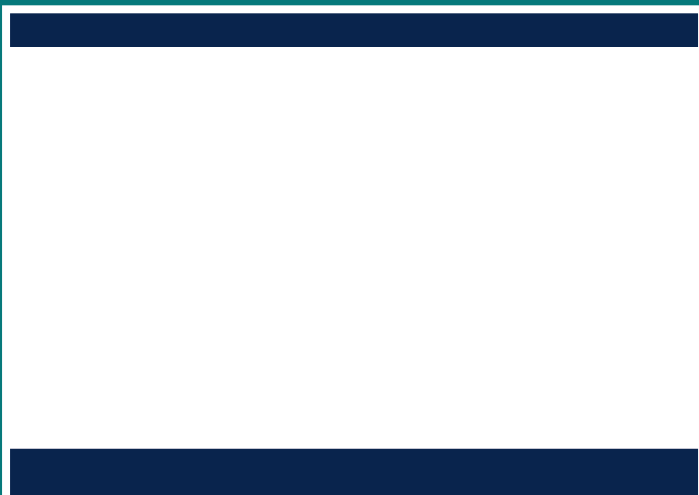
Ms. Ricamae V. Larrazabal, Project Technical Assistant I, and Ms. Janel Eder, Science Research Analyst, presented the DOST-FNRI-developed technologies ready for transfer and commercialization to the owners of La' Ana Backerei and Racquel's Bakeshop, June 15, 2023, via Zoom



Undergraduate Student Research Competition - Oral Presentation in the Nutrition/Dietetics and Food Technology/Food Science categories, June 23, 2023, via Zoom and Facebook live



Training-Workshop on DOST ePINOY (enhanced Package for the Improvement of Young Children) for CEST Burgos & Launching of 120-Day Complementary Feeding, June 21-22, 2023, Burgos, La Union



Radyo Pilipinas interview with Ms. Chona F. Patalen, DOST-FNRI Senior Science Research Specialist, on health and proper nutrition of children, June 26, 2023

# Overweight and obese Pinoy teens on the rise - DOST-FNRI

✍ FJPBatallantes, Project Technical Assistant II, TDSTSD



Overweight and obesity prevalence among Filipino adolescents significantly increased from 11.6 percent (%) in 2018 to 13 percent (%) in 2021.

This is according to a policy statement on “FAT (Fad and Trending)!: Adolescent Obesity” and data from the 2021 Expanded National Nutrition Survey (ENNS) of the Department of Science and Technology – Food and Nutrition Research Institute (DOST-FNRI).

The same survey revealed that males are more likely to be obese (14.8%) than females (11.3%), while urban areas have a higher percentage of obese people (16.2%) than rural ones (10.7%).

According to a 2016 study led by Banna, when a person reaches adolescence, a number of nutrition-related problems arise due to the consumption of low-nutrient energy-dense foods, excess intake of added sugar and fats, and an inadequate intake of micronutrients.

The World Health Organization (WHO) and DOST-FNRI reported that the development of obesity among adolescents can be due to decreased physical activities, sedentary lifestyle, altered eating patterns, increased fat content of the diet, and obesity-associated genes.

Moreover, according to the WHO, overweight and obese children are likely to stay obese into adulthood and more likely to develop non-communicable diseases (NCDs) like diabetes and cardiovascular diseases at a younger age.

The Department of Health’s National Nutrition Council (DOH-NNC) believes that the increasing obesity stigma needs multidisciplinary actions involving various stakeholders in encouraging communities to live a healthy lifestyle and make the country’s counter-measures and interventions more effective in protecting the health of future generations.

The DOST FNRI recommends that National Government agencies must develop standard protocols for physical activity programs and routine, provide parents and caregivers with the latest health information and other resource materials, fund and regularly organize seminars or courses on nutrition and physical activity, increase surveillance, and support and fund researches studies focusing on symptoms, prevention, and cure of genetic factors of obesity such as metabolic syndrome.■

# Climate change, calamities affect food security of poor Pinoy households

✍ FJPBatallantes, Project Technical Assistant II, TDSTSD



Poor Filipino households and nutritionally vulnerable population groups face food and nutrition insecurity, particularly after natural disasters.

This is according to a policy statement of the Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI) on “Climate shocks, calamities exact human collateral damage, food and nutrition security threatened.”

The Philippines receives an overdose of natural calamities, like destructive typhoons, devastating and lingering floods, landslides, and earthquakes (Asian Disaster Reduction Center).

Climate change caused by environmental destruction and unchecked industrial expansion worsen the magnitude of calamities and erratic weather patterns. These elevate climate change as an emerging concern on the nutrition and health agenda of the country.

As a result, food security is jeopardized at both the macro- and household levels, first with a disrupted food system, and eventually, intermittent availability of food on the table.

The study of Acuin (2017) revealed a significant difference in nutritional

status between individuals when grouped by age.

According to the study, exposure to calamities of the younger age group, specifically children and teenage pregnant women, did not predict poor nutritional status.

However, the elderly, who were poorly-educated, unemployed, with poor wealth status, and who experienced several bouts of calamities before the study, were more likely to be underweight and iodine deficient.

Additionally, studies conducted by Duante (2015 and 2017) revealed that households with higher educational attainment, higher participation in household food production programs, and smaller family sizes were less likely to suffer from hunger.

On the other hand, households engaged in agriculture showed no effect of climate shocks measured by temperature and precipitation on household food consumption.

However, with a simulated decrease in rainfall of 20 percent (%) to 10 percent (%), household food consumption decreased.

Moreover, increased rainfall tended to increase the incidence of illness among

children with nutritional deficiencies, according to a study by Talavera (2018).

Related to this, the DOST-FNRI believes that there is something that can be done in preventing hunger and malnutrition, and other problems caused by climate change.

The Institute recommends that climate change initiatives be localized with considerations for the vulnerability of specific population groups, such as the elderly and those living in ecological zones with increased precipitation.

National climate change initiatives should be translated into local actionable points, and that these be monitored and evaluated, the DOST-FNRI also recommended.

Further, the DOST-FNRI believes that localization of climate mitigation efforts is commendable and that much of what is being done at the top level remains tentative.

The resilience of vulnerable households and population groups are mere pluses in the climate change equation, but urgency and solid action need to be factored in now, the DOST-FNRI concluded. ■

# Only few Pinoy consumers check food labels before buying---DOST-FNRI

✍ FJPBatallantes, Science Research Specialist I, TDSTSD



Only 19.6 percent (%) or about 1 in 10 of Pinoy consumers read food product labels, while only 16.7% of them only check the expiration date and nutrition facts before buying.

This is according to an article “Socio-demographic Determinants of Filipino Consumers Reading Food Product Labels and Nutrition Facts”, which is based on the results of the 2018-2019 National Nutrition Survey (NNS) of the Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI) about the consumers’ use of nutrition information on processed food products.

The same survey also reported that reading labels is associated with the socio-economic status of the consumer.

The higher the consumer’s economic and educational level, the more frequently and in-depth is the manner of reading product labels, the survey noted.

According to the Food and Agriculture Organization’s (FAO) Guidelines on Nutrition Labeling, the two types of nutrition labeling are the nutrient declaration and the supplementary nutrition information.

The nutrient declaration lists the nutrient contents of the food, while the supplementary nutrition information increases the consumer’s understanding of the nutritional value of food and assists in interpreting the nutrient declaration.

Here in the country, Administrative Order (A.O.) 88-B series of 1984, provides the rules and regulations governing the labeling of pre-packaged food products distributed nationwide. This is to inform Filipino consumers about the content, nutritional properties, and necessary instructions of the food they are buying.

Moreso, as mentioned by Velasco (2018) in the Philippine Star article, the Department of Health-Food and Drug Administration (DOH-FDA) is mandated to regulate food products and “aligns its domestic policies on food-nutrition labeling with the guidelines provided by the Codex Alimentarius.”

The Codex Alimentarius is a set of internationally-recognized standards, codes of practices, and guidelines on food products, food production, and food safety, the article states.

The DOST-FNRI recommends that the DOH-FDA redesign the nutrition information panel on food products to make it easier for consumers to make informed food choices that contribute to lifelong healthy eating habits.

The DOH-FDA must address the serving size inconsistencies in nutrition labeling, reduce the amount of complicated information on the nutrition panel, and adopt or improve front-of-pack (FOP) labeling systems, the DOST-FNRI recommendation added.

Further, the Institute recommends that other research institutes conduct studies on nutrition labelling and focus on developing better numeric and non-numeric strategies to communicate nutrition information to the public.

Likewise, the national government agencies should initiate intensive awareness campaigns on nutrition labelling among consumers using both traditional and digital technology information drives.■



image courtesy of Eleni Kalorkoti for The New York Times

## How sweeteners accelerate puberty?

Learn the bittersweet truth in the webinar **"Non-nutritive sweeteners and precocious puberty"** by Dr. Yang Ching Chen of Taipei Medical University Hospital

08 May 2023  
10.00 - 11.00 H  
via Zoom (link to follow)

Register here or Scan the QR code below:  
<https://forms.office.com/r/RqWkgC2StF>



on May 8, 2023, the first day of Dr. Chen's research visit, to kick off the collaborative research. The virtual learning and development initiative was attended by 60 DOST-FNRI staff.

Precocious puberty, also known as premature or accelerated adolescence is the early appearance of physical and hormonal signs of pubertal development. This can be exemplified by the growth of breasts and body hairs among girls at ages 6 to 7 when this is supposed to start at age 8, or even later.

During the webinar, Dr. Chen reported the results of her research on aspartame, glycyrrhizin, and acesulfame potassium, three known non-nutritive sweeteners, on premature adolescence.

These three sweeteners posed differing effects on precocious puberty.

Aspartame, for instance, a low-calorie sweetener found in diet sodas and dairy products such as yogurt, delays puberty among adolescent females by controlling the effects of the growth hormones.

Glycyrrhizin, a natural sweetener from the roots of licorice plants, reduces the risk of precocious puberty by promoting healthy intestinal microbial composition among female adolescents.

Meanwhile, acesulfame potassium, a major ingredient of tabletop sweeteners, promotes accelerated adolescence by triggering the premature production of the gonadotropin-releasing hormone (GnRH).

Sex hormones such as testosterone and estrogen are among the known gonadotropins.

Research findings such as these are expected to be generated, as the joint research project between the DOST-FNRI and Taipei Medical University commences early next year.

The MECO-TECO Joint Research Project (JRP)

The MECO-TECO JRP is an annual research call initiated between the Philippines' Department of Science and Technology (DOST) and The National Science and Technology Council (NSTC) of Taiwan.

For 2023, the priority areas for MECO-TECO collaborative projects include virology, artificial intelligence, biomedicine, smart farming, unmanned vehicle systems, disaster risk reduction, and nutritional genomics, among others.

Aside from joint research, other modes of MECO-TECO collaboration include scientific exchange, capacity building, training courses, and Sandwich Scholarship Program (SSP). ■

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### **DOST-FNRI Conducts DOST-wide Training on ... from p. 4**

On the closing day of the training, the preparation and presentation for Workshop 2 wherein the participants developed a message house for an existing DOST project and created a pitch deck that has been presented to a potential partner. Each group chose

a representative in presenting their outputs, which showed the fruits of the event.

Indeed, this is one of our first steps to make DOST a presence to everyone. The DOST-FNRI will continue to

deliver quality trainings to make our future projects more pandemic proof as we are #OneDOST4U.■



play a vital role in generating evidence required for effective policy formulation and program design to combat the double burden of malnutrition, which disproportionately affects low- and middle-income countries.

The lecture highlighted the significance of expanding biomarkers beyond anthropometry to better understand nutritional status. Dr. Owino showcased how stable isotope techniques accurately measure key nutrition factors including nutrient absorption, infant and young child feeding practices, and body fat accumulation.

Furthermore, Dr. Owino explored the principles behind using stable isotopes to assess protein quality, total vitamin A stores, and iron and zinc absorption. By sharing these insights, Dr. Owino underscored the invaluable role that stable isotope techniques play in advancing nutrition research and informed decision-making.


During the session, Dr. Owino also discussed the mechanisms through which the IAEA supports its Member States. Attendees were encouraged to participate in the IAEA's coordinated research projects and TC programs, fostering collaboration and knowledge sharing for collective progress.

Additionally, Ms. Amster Fei P. Baquiran, Senior Science Research Specialist of the Nutrient Availability Unit, presented an overview of DOST-FNRI's previous and ongoing IAEA-assisted projects. Her talk highlighted the Institute's remarkable capacities built over the years. She also shared future plans for DOST-FNRI as the leading agency in utilizing nuclear techniques for improved nutrition outcomes. ■



**THURSDAY CLASS WITH NFRDD**  
(NUTRITION AND FOOD R&D DIVISION)

**TACKLING NUTRITIONAL CHALLENGES  
OF THE 21ST CENTURY:  
HOW NUCLEAR  
TECHNIQUES HELP**


**8 JUNE 2023 | THURSDAY**  
**9:00 AM PST VIA **


**Meeting ID: 853 3634 5261**  
**Passcode: NFRDD**

The double burden of malnutrition, co-existence of stunting, wasting, micronutrient deficiencies with rising of overweight and obesity, remains a global problem with disproportionate burden on low-and-middle income countries. Complex and dynamic foods systems driven by strong factors such as climate change, urbanization and COVID-19 pandemic exacerbate the problem via reduced food nutrient concentration and bioavailability, increased sedentary lifestyle, consumption of unhealthy diets and exposure to adverse environmental hazards. Ability to accurately measure nutrition indicators such as nutrient absorption, infant and young child feeding practices, body fat accumulation becomes urgently imperative. The presentation will cover how the IAEA supports its Member States to apply safe and non-invasive stable isotope and related nuclear techniques to generate evidence necessary for policy formulation and programme design to combat the double burden of malnutrition.

**DR. VICTOR OWINO**

**Nutrition Specialist**  
**Nutritional and Health-Related Environmental Studies Section**  
**International Atomic Energy Agency**





# CONGRATULATIONS!

Newly promoted and original appointment staff



April 19, 2023 (from left to right)  
**Alexis M. Ortiz** (Chief Administrative Officer),  
**Jolly C. Cotara** (Science Research Specialist II),  
**Rowena V. Viajar** (Senior Science Research Specialist),  
and **Maricel C. Muga** (Science Research Specialist I)



May 2, 2023  
**Lhearnie M. Manongdo**  
(Science Research Specialist II)



June 16, 2023  
**Rod Paulo B. Lorenzo**  
(Science Research Specialist I)

# Library Acquisitions

 **DYDe Leon, Senior Science Research Specialist, TDSTSD**

Call number	Title/Authors
FN RA 601 A33 2021	Moderate and severe level of food insecurity is associated with high-calorie-dense food consumption of Filipino households / <i>Imelda Angeles-Agdeppa, Marvin B. Toledo and Jezreel Ann T. Zamora</i>
FN TX 361 D83 2022	Nutrition and health status of Indigenous Peoples (IPs) in the Philippines: results of the 2013 National Nutrition Survey and 2015 Updating Survey / <i>Charmaine A. Duante, Rovea Ernazelle G. Austria, Apple Joy D. Ducay, Cecilia Cristina S. Acuin and Mario V. Capanzana</i>
FN HB 801 A33 2022	Driver and barriers of whole grain consumption in the Philippines / <i>Imelda Angeles-Agdeppa, Marvin B. Toledo and Jezreel Ann T. Zamora</i>
FN TX 358 G85 2022	Association of household food security and dietary diversity of mother-child pairs in the Philippines / <i>Mildred O. Guirindola, Ma. Lynell V. Maniego and Cristine G. Malabad</i>
FN RC 685.H8 P38 2023	Prevalence and factors associated with hypertension among Filipino adults in different survey periods / <i>Chona F. Patalen, Maria Stephanie N. Parani, Apple Joy D. Ducay, Karla Denice A. Inso, Antoniette G. Cristobal, Ma. Lilibeth P. Dasco and Charmaine A. Duante</i>
FN TX 553.L5 M67 2023	Validity of body roundness index to screen abnormal blood lipid among Filipino adults / <i>John Carlo R. Morillo, Ernani R. Bullecer and Chona Fernandez-Patalen</i>
FN TX 553.A3 F75 2023	Comparing two simplified questionnaire-based methods with 24-h recalls for estimating fortifiable wheat flour and oil consumption in Mandaluyong City, Philippines / <i>Valerie M. Friesen, Jody C. Miller, Ryan B. Bitantes, Maria F. D. Reario, Charles D. Arnold, Mduduzi N. N. Mbuya, Lynnette M. Neufeld, Frank T. Wieringa, Ame Stormer, Mario V. Capanzana, Carl V. D. Cabanilla, Georg Lietz, Marjorie J. Haskell and Reina Engle-Stone</i>
FN TX 360.O6 A33 2023	Development of Phil-HEI and its evaluation of the Filipino diet: 2018 Expanded National Nutrition Survey / <i>Imelda Angeles-Agdeppa, Marvin B. Toledo, Janine Marie S. Dariagan and Jezreel Ann T. Zamora</i>
FN TX 537 G66 2023	Validity and reliability of online questionnaire on awareness, knowledge, attitude and self-efficacy (AKAS) on healthy eating for nutrition education and promotion / <i>Milflor S. Gonzales, Idelia G. Glorioso, Celina Ann J. Navarro and Therese Krista B. Jolejole</i>
FN QP 141.A1 F739d 2022	2019 Expanded National Nutrition Survey monograph series: the food, health and nutrition situation of Davao del Norte / <i>Food and Nutrition Research Institute</i>
FN QP 141.A1 F739da 2022	2019 Expanded National Nutrition Survey monograph series: the food, health and nutrition situation of Davao Oriental / <i>Food and Nutrition Research Institute</i>