ScienceInsight

News and Updates on Nutrition, Food Safety and Health

New Technologies and Paradigms in Nutrition and Food Safety

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Sustainable Food Systems and Impact on Nutrition Security

ILSI’s principles and best practices for Scientific Integrity
Two years ago, ILSI’s leadership began a process to review and assess the governance of ILSI and its Entities, with the goals of ensuring a more responsive, efficient and effective organization to meet with the changing world. In November 2018, ILSI’s Assembly, which formerly comprised of representatives of its corporate members, was changed to a federation of ILSI’s Entities, which are non-profit scientific organizations engaged in public-private partnerships throughout the world. With the support of its Board of Trustees and its Entities, ILSI will continue to raise the level of scientific excellence and knowledge throughout its global network.

At the 2019 ILSI Annual Meeting held in Florida, USA, the Assembly and Science Symposium provided a platform where ILSI Entities worked collaboratively to develop the program and shared resources by facilitating speakers from different parts of the world. Keynote speakers included Prof. Lex Bouter, Free University of Amsterdam, who shared the topic of New Development in Research Integrity, while Prof Karl Friedl, Senior Physiology Research Fellow, US Army, shared foresights on the 5th Industrial Revolution and how it may impact the food, agriculture and health sectors in the near future.

We are proud of our region’s 2 recipients for the Malaspina International Scholars Travel Award, Dr. Barakatun-Nisak Yusof, Malaysia and Dr. Dunyaporn Trachootam, Thailand. They made excellent presentations and engaged well with the ILSI scientific network and colleagues from ILSI Entities. Through their interviews in these pages, they share their research, aspirations as researchers and educators, as well as their thoughts on further engagement and collaboration with ILSI SEA Region.

In the last quarter of 2018, we hosted 3 regional scientific events in three different countries, including a MIYCN seminar and workshop in Malaysia, a scientific session on Sustainable Food System and Nutrition Security as part of the International Rice Conference 2018 held in Singapore, and a training workshop on Food and Nutrition Labeling and Claims in Myanmar.

In March 2019, ILSI SEA Region and the Agrifood and Veterinary Authority (AVA) of Singapore (now reorganized as the Singapore Food Agency) hosted a workshop under the World Bank initiated GFSP (Global Food Safety Partnership) program on Chemical Risk Assessment for Risk Assessors, which was attended by officials from food control agencies of ASEAN countries.

We are excited to be organizing our 2019 Annual Meeting and Science Symposium this year in Kuala Lumpur, Malaysia from April 23 to 25. I look forward to catching up with our Members, Directors and Scientific Advisors at the Annual Meeting, and to an excellent line-up of speakers for our Science Symposium on Smart Eating- Harnessing Innovative Approaches and Technologies for Health and Sustainability.

Boon Yee Yeong
Executive Director, ILSI SEA Region
ILSI’s Principles and Best Practices for Scientific Integrity

The International Life Sciences Institute (ILSI) is a global, non-profit scientific organization whose mission is to provide science that improves human health and well-being, and safeguards the environment.

Scientific Integrity lies at the core of ILSI, and we have a commitment to achieve and maintain the highest standards of scientific integrity in all that we do. This means that all of ILSI’s work adheres to the standards, professional values and practices of the scientific community in any area of research where we are engaged. Living up to this standard also means pursuing objectivity, clarity and reproducibility in order to ensure the utility of our scientific and scholarly activities.

To ensure this commitment is adhered to across all ILSI entities, a set of Mandatory Policies has been developed, which includes ILSI’s Principles for Scientific Integrity.

1. **Objectively Designed**
   Scientific research must be factual, transparent, and designed objectively with robust hypotheses.

2. **Under Control of Scientific Investigators**
   Both the study design and the research itself must always be under the control of the scientific investigators.

3. **No Remuneration**
   Scientific investigators must not be offered or accept remuneration geared to the outcome of the research project.

4. **Freedom to Publish**
   ILSI entities must ensure that investigative teams have the freedom to publish research results without interference.

5. **Full Disclosure**
   ILSI entities must require full disclosure of all financial matters of scientific investigators in publications and conference presentations.

6. **No Undisclosed Authorship**
   ILSI entities must not participate in undisclosed paid authorship arrangements in industry-sponsored publications or presentations.

7. **Accessibility to All Data**
   ILSI entities must guarantee accessibility to all data and control of statistical analysis by investigators and appropriate auditors/reviewers.

8. **Transparency of Affiliation**
   ILSI requires academic researchers who also act as contract researchers to clearly state their affiliations and publish under the auspices of the organization they are working for when undertaking studies.

The Mandatory Policies and the Principles for Scientific Integrity have been adopted by the ILSI Research Foundation and ILSI’s 16 branches, including ILSI SEA Region.

ILSI’s Management Team has established a Subcommittee on Scientific Integrity to develop guidance materials and provide training for all ILSI Entities in the implementation of the Mandatory Policies and the ILSI Principles for Scientific Integrity.
The scientific research environment is being rapidly transformed by factors such as globalization, interdisciplinary research, and information technologies. This has resulted in scientists seeking advice, looking for coherent approaches, and searching for tools that they can use to build and sustain a culture of scientific integrity within their institutions and scientific communities.

Within ILSI, much of the work to foster and promote a culture of scientific integrity has been initiated and led by ILSI North America. In 2017, ILSI North America, together with the U.S. National Academies of Sciences, Engineering and Medicine’s Government-University-Industrial Research Roundtable (GUIRR), convened a meeting to bring together a diverse group of scientists and research program administrators from academia, government and the private sector. The group achieved consensus on recommendations for a coherent approach, and a uniform set of tools for creating a culture of scientific integrity.

This effort has led to the establishment of the Scientific Integrity Consortium, which is represented by 4 U.S. government agencies, 3 Canadian government agencies, 11 professional societies, 6 universities, and 3 non-profit scientific organizations. Input has also been shared by individual sectors and scientific disciplines.

The goal of the Scientific Integrity Consortium is to have broad representation from multiple scientific disciplines and fields. Although work on scientific integrity has been ongoing for several decades, it is agreed that first there must be community consensus and alignment around the necessity for scientific integrity standards and their content. Members of the Consortium also believe that principles and best practices are an initial step in that process.

**PRINCIPLES AND BEST PRACTICES**

The Scientific Integrity Consortium has developed 2 Principles and 9 Best Practices to:

- Help strengthen scientific integrity policies that are already in place,
- Aid in the development of new policies, and
- Raise the importance of creating a culture in the scientific community that upholds scientific integrity.

**Overarching Principles for Fostering Scientific Integrity**

1. **Foster a culture of integrity in the scientific process**

   A culture of integrity in science is one that rewards scientific integrity and professional excellence; fosters an environment in which open discussion reflects a balance of diverse scientific views, and is committed to transparency, honesty, and thorough consideration of research outcomes.

   To nurture a culture of integrity, institutions must develop policies, procedures, and practices that address scientific integrity, provide training of personnel, and work continuously to maintain awareness and advocacy for these practices.

2. **Evidence-based policy interests may have legitimate roles to play in influencing aspects of the research process, but those roles should not interfere with scientific integrity**

   Most scientific research has the goal of producing information that will be useful to society; where policy decisions are to be made, science should and must play a central role in the formulation of evidence-based policy-making. Established research procedures must be rigorously followed, study limitations must be acknowledged, and data on which results are based must be available to the maximum extent allowed by good research practice to assist in review and evaluation.

   Ultimately, the use of science in public policy, as well as in decision-making and public opinion, should not affect the content or the merits of the science.
Best Practices for Fostering Scientific Integrity
The Consortium recommends the following 9 Best Practices for fostering scientific integrity:

1. Require universal training in robust scientific methods, in the use of appropriate experimental design and statistics, and in responsible research practices for scientists at all levels, with the training content regularly updated and presented by qualified scientists.

2. Strengthen scientific integrity oversight and processes throughout the research continuum with a focus on training in ethics and conduct.

3. Encourage reproducibility of research through transparency.

4. Strive to establish open science as the standard operating procedure throughout the scientific enterprise.

5. Develop and implement educational tools to teach communication skills that uphold scientific integrity.

6. Strive to identify ways to further strengthen the peer review process.

7. Encourage scientific journals to publish unanticipated findings that meet standards of quality and scientific integrity.

8. Seek harmonization and implementation among journals of rapid, consistent, and transparent processes for correction and/or retraction of published papers.

9. Design rigorous and comprehensive evaluation criteria that recognize and reward the highest standards of integrity in scientific research.

Through these principles and best practices, both ILSI and the Scientific Integrity Consortium seek to highlight the multiple aspects of scientific integrity. To further aid in the adoption and implementation of such principles and best practices, further steps need to be taken to raise awareness of their purpose and benefits. Within ILSI, these efforts include discussions and initiatives regarding the development of Scientific Integrity Resource Guides as well as training materials that can be applied across ILSI’s entities.

The full document of the Scientific Integrity Consortium's Scientific Integrity Principles and Best Practices was published in February 2019 in Science and Engineering Ethics, is available open access at: https://rdcu.be/boMuP
ILSI Annual Meeting 2019: A Report from Florida

The Annual Meeting of the International Life Sciences Institute (ILSI) is held in January each year. The event is a premiere gathering of scientists from around the world, where the primary focus is to learn about new food safety and nutrition science, and to identify areas where ILSI can have an impact on public health.

This multi-disciplinary meeting is an opportunity for experts from all sectors to collaborate and share knowledge. This year’s Annual Meeting was held in Clearwater, Florida, USA. The team from ILSI SEA Region participating in this year’s meeting included Executive Director, Mrs Boon Yee Yeong; Director of Scientific Programs, Ms Pauline Chan; and Manager of Scientific Programs, Ms Jocelyn Wong.

MANAGEMENT AND STAFF MEETINGS
Several meetings among ILSI’s Management Team and ILSI staff from its various entities were organized. These were wonderful opportunities for colleagues and friends with the ILSI family to share experiences and best practices, as well as to discuss strategies towards strengthening and enhancing ILSI’s management and operations around the world.

At the 2019 Annual Meeting, Mrs. Boon Yee Yeong, Executive Director of ILSI SEA Region, officially took on the role of Chair of the ILSI Management Team. Mrs. Yeong took over from Dr. Morven McLean, ILSI Research Foundation, who was Chair of the Management Team for the inaugural 1-year term. The ILSI Management Team comprises Executive Directors from the ILSI entities namely, the ILSI...
branches and the ILSI Research Foundation. ILSI’s Management Team, together with the Board of Trustees and the Director of Operations, are responsible for developing and implementing ILSI’s strategic plan and budget. The Management Team is also responsible for ensuring the effectiveness of collaborative projects and communications between ILSI entities and within the ILSI network.

This year, the ILSI Asian Entities Meeting saw representatives from the 6 Asian entities, namely, ILSI Focal Point in China, ILSI India, ILSI Japan, ILSI Korea, ILSI SEA Region and ILSI Taiwan, get together to share their programs and achievements over the past year. They also discussed the progress of collaborative projects that are being jointly undertaken by the entities.

These collaborative projects include scientific sessions at the 13th Asian Congress of Nutrition, the organising of the 11th ILSI BeSeTo Meeting, and a report on Nutrition Labeling and Claims in Asia.

Overall, it was yet another productive and fruitful meeting between ILSI Asian entities.

ANNUAL MEETING SCIENCE SYMPOSIUM
The Science Symposium is a key highlight of ILSI’s Annual Meetings, where renowned experts from around the world are invited to share their latest knowledge and research findings in emerging scientific issues that impact public health.

With technology playing an increasingly greater role in influencing our choices when it comes to food, health and lifestyle, this year’s Science Symposium focused on the overarching theme of “A Brave New World in Nutrition & Food Safety: Applying New Technologies and Paradigms in Nutrition & Food Safety”

The Science Symposium included presentations on new technologies in the following thematic areas:
- Food Safety
- Diet and Activity Assessment
- Novel Foods
- Food Processing and Waste

Keynote Presentations
In his keynote address, Dr. Karl Friedl, Senior Physiology Research Scientist, U.S. Army, talked about new technologies and the 5th industrial revolution, as well as current trajectories for nutrition science and health promotion. He said that each phase of the industrial revolution has focused on specific technological breakthroughs and innovation, first in mechanical technology, followed by electrical, digital, and virtual technologies. The 5th phase will focus on personalized technology, where artificial intelligence and robotics will change the way we work and play.

In the field of nutrition and health, technological innovations can provide continual close monitoring of our behaviour (e.g., of food intake) to optimize individual health and performance.

Dr. John Floros, New Mexico State University, USA, presented on a study conducted to identify science breakthroughs to advance food and agricultural research in the United States by 2030. The study sought to determine the most challenging issues in food and agriculture that can be addressed by science, and identify science breakthroughs necessary to meet the challenges. Dr. Floros highlighted the need to improve efficiency, to increase resilience in order to adapt to rapid changes and extreme conditions, as well as to increase sustainability.

Scientific breakthroughs that could achieve these objectives include a systems approach to understanding the nature of interactions among the different elements of the food and agricultural system, as well as initiatives to more effectively employ existing technologies and to develop new sensing technologies across all areas of food and agriculture. Dr. Floros concluded that research infrastructure, funding, education and building of a scientific workforce, as well as socioeconomic and other considerations need to be put in place in order to achieve these advancements.
Mr. Elliot Roth, Spira Inc, shared the emerging trends in consumers’ food behaviour, including interest in and demand for alternative protein products. With the world’s population continuing to grow rapidly, traditional methods of meat production are no longer sustainable. Consumers and food manufacturers are thus interested in alternative proteins such as soy, insect, whye and algae. New technologies, including gene editing technologies, has provided the ability to create good tasting products from these alternative ingredients that meet consumers’ needs.

**Session 1: New Technology for Improving Accuracy in Food Intake and Physical Activity Assessment**

The objective of this science session was to explore advances in technologies and tools to improve accuracy of food intake and physical activity assessment with a global perspective.

Dr. Hiroyuki Sasai, University of Tokyo, Japan, presented a study on the accuracy of wearable devices for estimating total energy expenditure, in comparison with metabolic chamber and doubly-labeled water method.

Prof. Janet Cade, University of Leeds, UK, shared research into dietary intake assessment using technology such as online tools, apps and wearable devices. She noted the current gaps, such as the need for improvements in validation methods and reporting, as well as future research needs.

Prof. Edward Delp, Purdue University, USA, explored the topic of new technologies from an engineering perspective. He shared on how technology assisted dietary assessment, including in-depth analysis of food images taken during eating occasions, can have an impact on how dietary assessment is carried out and how dietary patterns are investigated.

**Session 2: New Technologies and Approaches in Microbiota Research for Managing Food Safety**

The objective of this science session was to examine innovations in food safety employing transformational technologies and approaches in animal microbiota research to combat pathogens in the food supply impacting human health.

Prof. Noelle Noyes, University of Minnesota, USA, presented research findings on pathogens and antimicrobial resistance in the microbiome. She highlighted that while new methods such as metagenomics can help to generate important information and data, it is also crucial not to interpret results only at face value, especially in the era of “big data”.

In his presentation, Dr. Peter Gerner-Smidt, US Centers for Disease Control & Prevention, USA, explained how emerging technology, such as whole genome sequencing, are becoming the new gold standard in characterizing and tracking foodborne microorganisms. This will have important implications in improving food safety, and in the surveillance of foodborne disease outbreaks globally. However, he also pointed out some challenges, such as the need for improvements in sequencing, informatics, and bioinformatics technology.

**Session 3: How Can New Technology Impact Research Studies?**

This session explored how novel technologies can impact study design, data collection, and analysis.

Asst. Prof. Gregory Pavela, University of Alabama at Birmingham, USA, discussed novel designs for scientific research studies from a statistical perspective. He concluded that there are novel designs and analyses that can improve upon “ordinary” observational research and which could approach the benefits of randomized controlled trials (RCTs). He also pointed out that there are limitations to RCTs.

Prof. Lorraine Brennan, University College Dublin, Ireland, presented on how new technologies, such as nutrigenomics and metabolomics, can help to maximise output from nutrition studies.

Dr. Cronan McNamara, Crème Global, discussed how new technologies, digitization and access to big data are leading to changes in study models and methodologies in food safety and nutritional research.
Session 4: New Technologies and Applications in Food Science

This science session presented new technologies in food science for the development of new foods and ingredients, innovations beyond preservation, and applications for food safety, in response to consumer demands, needs and expectations.

Dr. Gerardo Gonzalez-Martinez, Lund University, Colombia, provided an overview of how high pressure pasteurization (HPP) is a promising cold pasteurization technique that aims to reduce or eliminate harmful bacteria and extend the shelf life of food products. He also shared that HPP can be applied in the development of novel and healthier foods with better textures to meet consumer needs.

Dr. Marco Lucisano, RISE Research Institutes of Sweden, explored the topic of sustainability and recycling in packaging. He shared insights on consumer concerns and behaviour relating to environmental and sustainability issues, trends and initiatives to increase recycling and reuse of materials, with the aim of achieving a circular economy where waste is minimized and resources are maximized.

Session 5: Novel Foods and the Future – Opportunities, Challenges and Exploring the Path Forward for New Technologies

This science session explored opportunities, challenges and the path forward for the latest new technologies used to create novel foods and ingredients.

Dr. Richard Williams, George Mason University, USA, presented on the benefits and challenges relating to emerging foods and food technologies. He noted that consumers are increasingly concerned with issues such as animal welfare, the environment and sustainability. This has led to greater demand for clean labels and reduction in meat consumption, as well as the emergence of new technologies such as vertical and urban farming, cell-based meat, and 3-D food printing.

Dr. Ashley Roberts, Intertek, Canada, shared the international perspective relating to regulatory challenges for food ingredients produced through novel technologies. While industry strives to develop new technologies for new and existing food and food ingredients, there is a need to ensure that such food and food ingredients are safe for consumption by consumers globally. Regulatory requirements for such new technologies should also be aligned between jurisdictions.

Dr. Liza Specht, The Good Food institute, highlighted during her presentation that although there is increasing awareness among consumers that eating meat is harmful to the environment, the demand for meat continues to rise. Nonetheless, new technologies are unlocking opportunities to develop the next generation of meat using more sustainable production methods. Innovations in plant-based meat and cell-based meat are two promising solutions to meet growing global protein demand.

Session 6: Food Processing and Food Waste – State of Technology

This science session explored the positive impacts of new technologies and opportunities for reducing food waste.

Ms. Gail Tavill, Conagra Brands, USA, presented on the role of technology in reducing food waste in the home. Ms. Tavill shared that modern food processing techniques and packing innovations have resulted in much positive impact on food supply and preventing waste on many levels. However, the next level of innovations will further help consumers in planning, shopping and food preparation, often with the objective of preventing or reducing food waste in the home. New technologies will also help home and kitchen appliances to turn trash into valuable materials such as fertilizer or even energy. She concluded that social and cultural innovations are needed to reinforce the inherent value of food and food systems.

The last presentation was by Prof. Paul Teng, Nanyang Technological University, Singapore, who focused on novel approaches to managing consumer food waste for food security and sustainability. He pointed out that food losses and waste occur all along the food supply chain, from agricultural production at one end, to consumers at the other end. Novel approaches and technologies to reducing food waste are being developed and trialled in many countries; but for these innovations to be effective, mindset changes by the public are key. Thus, educating the urban public on where food comes from, how it is produced, and how it can be lost is important to create awareness about the role of the consuming public in reducing food waste and contributing to a more food secured and sustainable future.

To view the presentations shared at the ILSI Annual Meeting Science Symposium, please visit http://ilsi.org/event/2019-ilsi-annual-meeting/
POSTER SESSION AT ILSI ANNUAL MEETING 2019

Each year, a Poster Session is held at the ILSI Annual Meeting to allow each ILSI entity to exhibit a poster on its work and achievements over the past year. It is a good opportunity to learn about each entity’s programs and activities, as well as for colleagues to meet and exchange news.
The Malaspina International Scholars Travel (MIST) Award is granted to exceptional early career scientists to help foster their professional growth and development.

The award is named after Dr. Alex Malaspina, ILSI’s first President.

Each year, candidates for the award are nominated by the ILSI entities, from which successful candidates are selected and invited to attend the ILSI Annual Meeting. Besides receiving their MIST Awards at the Annual Meeting, these early career scientists will have the opportunity to meet and interact with other scientists, experts from industry, academia and government, as well as ILSI staff from all over the world.

Among the 6 scientists who received MIST Award in 2019, two are promising scientists from Southeast Asian countries who were nominated by ILSI SEA Region.

The two scientists are Dr. Dunyaporn Trachootham, an Assistant Professor at the Institute of Nutrition, Mahidol University (INMU), Thailand; and Dr. Barakatun-Nisak Mohd Yusof, an Associate Professor in the Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM), Malaysia.

ILSI SEA Region congratulates both Dr. Dunya and Dr. Nisak on receiving the 2019 Malaspina International Scholar Travel (MIST) Award, and appreciates their insightful thoughts and comments shared during these interviews. We look forward to working with them on their areas of research interest, in our continuing efforts to improve public health and well-being in Southeast Asia.

More information on the Malaspina International Scholar Travel (MIST) Award, the 2019 Award recipients and their research can be found here: http://ilsi.org/malaspina-scholars/.
INTERVIEW WITH DR. DUNYA PORN TRACHOOOTHAM, INMU, THAILAND

Sharing your Research

Please tell us more about your research project which you had presented at the ILSI Annual Meeting.

The project is on research and development of a functional food product for tertiary cancer prevention, and the product is named Nutri-PEITC jelly. This project requires the integration of multidisciplinary sciences to achieve sensory acceptability, safety and efficacy. I play a key role in the safety and efficacy aspect.

What spurred this research?

Oral cancer patients encounter multiple problems due to chewing and swallowing difficulty, oral side effects of therapy, leading to malnutrition, poor quality of life and short survival. The innovative product we have developed aims to address such problems, and to improve quality of life and extend the life of cancer survivors. This project was encouraged and supported by the Dental Innovation Foundation under royal patronage of His Majesty King Bhumipol.

Regarding Functional Foods, what do you think are the critical issues in the Southeast Asia region that need to be addressed?

Unlike drugs, the regulation and standard practice guideline for clinical trials of functional foods are not available. Populations in the Southeast Asia region are facing huge incidences of non-communicable diseases (NCDs) including diabetes mellitus, cancer, and neurological disorders. The harmonization of regulations and guidelines in the region for conducting research involving functional foods will help to foster the research and development of functional foods, and may eventually help to reduce risks of NCDs.

Receiving the 2019 MIST Award

How do you feel about achieving the Malaspina International Scholars Travel Award, and what did you gain from your experience attending the ILSI Annual Meeting?

I feel honored and grateful to receive the award. The ILSI meeting was an eye-opening and "brain-sharpening" experience!

What roles can ILSI SEA Region play in scientific research, and specifically in your area of research?

ILSI promotes collaboration between academic, governmental and industrial scientists. Therefore, I think that ILSI SEA Region can contribute by fostering harmonization of regulations and guidelines for conducting research involving functional foods.

How can ILSI SEA Region further connect and engage with early career scientists and future leaders in the region?

Subscription-based alerts from ILSI SEA Region is a good way to connect with younger scientists. Posting regular updates of hot topics and ILSI SEA Region’s research work will encourage younger scientists to share the information, leading to more engagement within this target group. Another way to increase ILSI SEA Region’s profile and awareness of its work among younger scientists is through the announcement of research grants.

Thoughts on Future Research

Would you like to share some of your thoughts on other topics or areas that you are interested in?

Personalized nutrition is a key emerging area. There is no “magic bullet” diet or nutrition intervention that can work for everyone. What we need is to identify the factors that can have an impact on each individual’s response to any specific intervention.

What would be your hopes or vision for the future of nutrition and health in your country?

Healthy lifestyle behavior is the ultimate solution for sustainability of good nutrition and health. Functional foods may be helpful for high risk groups at certain times. However, if people do not practice healthy habits, they are less likely to remain healthy for longer. Specifically in Southeast Asia, we have excessive use of seasonings in our food, which may pose risks of NCDs. Personally, I would like to see cultural shifts toward a milder but balanced taste of Southeast Asian food.
Sharing your Research

Tell us more about your research project which you had presented at the ILSI Annual Meeting.

My research projects lie in understanding the integrative approaches between basic science and applied research in developing the best model of nutrition therapy for the prevention and management of diabetes.

During the ILSI Annual Meeting, I presented a summary of our various works on diabetes nutrition with the aim of improving metabolic control and quality of life in those with type 2 diabetes, women with gestational diabetes, and obese individuals. I believe this approach is in line with ILSI SEA Region’s commitment to bringing cutting-edge science for public health impact in the Southeast Asia region.

What spurred this research?

Asia has been experiencing a tremendous surge in diabetes, and Malaysia is no exception. Among those with diabetes, their unmet needs in achieving optimal glycemic control remains. These situations trigger my continuous motivation to work on diabetes and nutrition among individuals and communities with diabetes.

Regarding Type-2 Diabetes in Southeast Asia, what do you think are the critical issues that need to be addressed?

Working on diabetes and nutrition since my Ph.D. makes me realize the critical needs of people with diabetes in Malaysia and the Southeast Asia region. One of the most significant challenges to the success of lifestyle interventions is the difficulty in adhering to nutrition intervention. Hence, continuous efforts are warranted to identify the best nutrition therapy model and to better understand the unmet needs of people with diabetes.

Receiving the 2019 MIST Award

How do you feel about achieving the Malaspina International Scholar Travel (MIST) Award, and what did you gain from your experience attending the ILSI Annual Meeting?

Receiving the MIST Award and attending the ILSI Annual Meeting are professionally rewarding experiences. The Award is an essential impetus for me to continue working in this area, and to align my work with ILSI’s strategy of seeking a balanced approach to solving problems of shared concern to improve the health and well-being of the general public.

The ILSI Annual Meeting was well-organized, and I received very useful information and knowledge from the eminent scientists from around the world who attended the meeting. I also valued the ‘student mixer’ program, allowing for informal discussions with the established scientists from various fields, thus deepening our understanding about research careers and leadership in science. This informal mentoring support provides collective motivation for us to grow as a future scientist and leader, which is very much the aim of the MIST Award.

What roles can ILSI SEA Region play in scientific research, and specifically in your area of research?

ILSISEA Region has been making incredible efforts in advancing the understanding of scientific research, including for the prevention of non-communicable chronic diseases such as diabetes. As in any other area of research, grant funding is a critical component to keep a scientific research project going. While government funding is still the cornerstone of research support, scientists should explore other options to navigate new fundraising systems. In this context, ILSI SEA Region can be a platform to broaden the funding base from industry partners, philanthropies and other organizations that could fill the funding gap. This would help younger scientists and future leader to advance the science in their fields of research.

How can ILSI SEA Region further connect and engage with early career scientists and future leaders in the region?

ILSI SEA Region has been organizing scientific seminars and workshops at a reasonable fee which are affordable for younger scientists, and this invaluable effort should continue. To further connect and engage with the younger scientists, a session such as “Meet-the-Expert Panel” can be crafted during lunchtime at each of the seminars to encourage informal discussions between future leaders and eminent scientists, allowing the younger scientists to gain insights and inspiration to further progress in the sciences.

Thoughts on Future Research

Would you like to share some of your thoughts on other topics or areas that you are interested in?

Besides being a scientist, I love teaching. Poet William Butler Yeats remarked, “Education is not the filling of a pail, but the lighting of a fire.” As an educator, I am currently exploring the various innovations in pedagogy through cybergogy, and in engaging students beyond the classroom. The best reward for an educator is helping a student to reach clarity. This moment can be life-changing for both students and educators.

What would be your hopes or vision for the future of nutrition and health in your country?

The most pressing unmet need in the diabetes space is the development of a breakthrough nutrition model that addresses the personalized nutrition needs of individuals with diabetes and which in the long run, can be used to reverse diabetes.

YUSOF, UNIVERSITI PUTRA, MALAYSIA

INTERVIEW WITH DR. BARAKATUN-NISAK MOHD YUSOF, UNIVERSITI PUTRA, MALAYSIA
Updates on Maternal Nutrition and Birth Outcomes in Southeast Asia

Despite mounting international and national efforts in recent years, low birth weight and stunting continue to remain highly persistent in Southeast Asia, contributing to a myriad of health, social and economic consequences, and potentially, a vicious cycle on the future generations. On the other hand, little attention has been paid to gestational diabetes mellitus (GDM) in Southeast Asia despite its emerging prevalence. If left untreated or poorly managed, this may lead to higher risk of Type 2 diabetes mellitus and long-term health implications in both mother and offspring.

Jointly organized by ILSI SEA Region and Nutrition Society of Malaysia, a 2-day seminar and workshop on “Maternal, Infant and Young Child Nutrition: Maternal Nutrition and Birth Outcomes in Southeast Asia” were held in Kuala Lumpur, Malaysia on November 13-14, 2018 to discuss trend data, efforts and related issues pertinent to the persistence of low birth weight and stunting, as well as the management of GDM in Southeast Asia.

LOW BIRTH WEIGHT AND STUNTING

Economic and Health Impact of Persistent Low Birth Weight and Stunting

Mr. Geoffry Smith, President, ILSI SEA Region opened the seminar with a comprehensive overview of the persistence of low birth weight and stunting in Southeast Asia, and the resulting economic and health impacts. While the UNICEF 2016 report showed that Southeast Asia has made considerable progress in reducing stunting in the last decade, its prevalence remains high, particularly in the Philippines, Cambodia, Myanmar, Indonesia and Lao PDR. Mr. Smith further shared various nutrition interventions, underlying causes and consequences in terms of health, social and economic aspects. He underlined the need to adopt a multisectoral approach to address these causes collectively to yield greater improvement in low birth weight and stunting rates in Southeast Asia.
**Trends, Interventions and Challenges**

**Indonesia**
Ms. Ardhiantie, National Development Planning Agency, Indonesia highlighted that the stunting prevalence rate is still alarmingly high in Indonesia despite improvement over the recent years. An increase in the prevalence of anemia and low birth weight were also noted. She highlighted that the causes are multidimensional and wider intervention coverage at provincial and district levels is required to effectively address the problem. In addition to the Scaling Up Nutrition (SUN) movement, a multi-stakeholder approach - Integrated Nutrition Intervention (INI) - was launched in 2017 to ensure better coordination in program implementation from central government to community levels, with the key aim of accelerating nutrition improvement and progress of stunting reduction.

**Lao PDR**
Dr. Ratthiphone Oula, Ministry of Health, Lao PDR shared that despite a positive downward trend in stunting rates among children under five in the country, there are still significant disparities across the 18 provinces. In response to the malnutrition and associated economic loss of 2.4% GDP in Lao PDR, the country has implemented various strategies such as the National Nutrition Strategy to 2025 and Plan of Action 2016-2020 (NNSPA) within the context of a multi-sectoral approach. Nutrition coordination with key stakeholders was also strengthened despite limited capacity and resources. However, fostering convergence across multiple sectors continues to be a challenge in Lao PDR.

**Malaysia**
In her presentation, Ms. Zalma Bt Abdul Razak, Ministry of Health, Malaysia reported that the trends of low birth weight in Malaysia have not improved since 2010. Furthermore, an increasing trend in stunting was observed from 2011 to 2016. From the National Health and Morbidity Survey (NHMS) 2016, she noted that the age of mother, household income group and education level play a vital role in determining the low birth weight rates in Malaysia. Nutrition counseling for pregnant women and baby-friendly clinic initiative (KRB) for children below five were among the nutrition interventions being rolled out to tackle low birth weight and stunting.

Ms. Zalma emphasized the importance of conferring wide program coverage and tailoring interventions to specific groups although outreach to mothers outside government health facilities is still a challenge. She concluded that partnership with global networks, collaborative engagement with agencies and nutrition education are keys to driving progress in the reduction of low birth weight and stunting.

**Myanmar**
Dr. Soe Min Oo, Ministry of Health, Myanmar summarized the trend data from Myanmar Demographic and Health Survey (MDHS), showing a decline in low birth weight and stunting in children under five over recent years. However, substantial differences among certain states and regions in terms of stunting prevalence were noted; which could be associated with maternal education and household wealth quantile level. Dr. Soe shared that the government is putting greater emphasis on the role of nutrition as compared to the past. The National Nutrition Center (NNC) has identified several nutrient deficiencies such as vitamin A, B1 and iron as major malnutrition problems.

In recognition of the severity of malnutrition, various national policies and strategies including breastfeeding and complementary feeding practices have been implemented and yielded positive outcomes. Despite that, nutrition promotion in Myanmar faces numerous challenges including weak law enforcement, leadership and poor data quality. He concluded that the future key priorities are to establish a national and regional nutrition sector coordination committee, revise the national nutrition policy, scale up integrated nutrition interventions and align actions around a common result framework.
Over the last decade was attributed to the improved reduction in low birth weight and stunting prevalence in Vietnam. It is imperative for the country to take them into consideration when developing strategies to tackle it. From the demographic and socioeconomic transition, the double burden of malnutrition, low breastfeeding rate, and increasing teenage pregnancy rate emerge as challenges, such as the double burden of malnutrition, low breastfeeding rate and increasing teenage pregnancy rates emerge from the demographic and socioeconomic transition, it is imperative for the country to take them into consideration when developing strategies to tackle low birth weight and stunting rates.

However, Prof. Barba pointed out that there is a lack of effective implementation of these strategies. While access to health services has improved, gaps continue to persist, particularly in geographically isolated and disadvantaged areas, and due to emergency situations that disrupt routine programs. She emphasized the need to contextualize international and regional strategies based on local context and local governments to prioritize nutrition and provide funding in order to achieve viable improvements in low birth weight and stunting rates.

Thailand
Assoc. Prof. Umaporn Suthutvoravut, Mahidol University, Thailand noted that the prevalence of stunting under five has declined substantially since 1987, while there was a mild improvement in prevalence of low birth weight. She shared that the use of integrated and life course approach, implementation of Thailand’s Poverty Alleviation Plan in conjunction with Primary Health Care and community-based nutrition programmes, are key factors underpinning the successful decline in malnutrition among mothers. As challenges, such as the double burden of malnutrition, low breastfeeding rate and increasing teenage pregnancy rates emerge from the demographic and socioeconomic transition, it is imperative for the country to take them into consideration when developing strategies to tackle low birth weight and stunting.

Vietnam
Prof. Le Thi Hop, Vietnam Nutrition Association (VINUTAS), Vietnam explained that the remarkable reduction in low birth weight and stunting prevalence over the last decade was attributed to the improved nutritional status of women of reproductive age and children, as a result of effective nutrition strategies, increased government support and stronger cooperation with international organizations and private sectors. Nonetheless, micronutrient deficiency remains a perplexing nutritional problem in Vietnam while decreasing government investment is impeding the sustainability of nutrition programs. Moving forward, she hopes that greater actions could be taken to address the gaps in data collection and reporting, rising double burden of malnutrition and strengthen capacity building for nutrition.

Gaps in Data Collection, Analysis and Reporting
Assoc. Prof. Pattanee Winichagoon, Institute of Nutrition, Mahidol University, Thailand presented on Identifying and Addressing Gaps in Data Collection, Analysis and Reporting: Low Birth Weight and Under-Five Undernutrition. Using several national surveys from various Southeast Asian countries, she deliberated on the gaps and limitations in the data source, methodology of data collection and analysis, data quality and the underlying challenges which affected the true reflection of low birth weight and stunting situation in the respective countries. Assoc. Prof. Winichagoon emphasized the importance of understanding these limitations in the light of available data and encourage maximizing its usefulness to support programs and policy decisions.

STATUS, IMPACT, PREVENTION AND MANAGEMENT OF GDM
Prof. Dato’ Dr. Sivalingam Nalliah, International Medical University, Malaysia shared a review study in his presentation on Rising Prevalence of GDM in Asia: Challenges and Solutions, where ethnicity, socioeconomic status, lifestyle disparities, and use of different screening regimes and testing methods were identified as contributing factors for its prevalence. Given its rising prevalence in Asia, particularly in Malaysia, current strategies and challenges faced in GDM management were discussed. Vertical point of care, fragmented approaches, lack of longitudinal care of mother and child and empowerment of patients, nurses and NGOs were among the gaps that need to be addressed.

Prof. Nalliah further shared research studies on the risk factors, complications, diagnostic criteria and screening methods, as well as the effect of interventions on maternal and birth outcomes. He encouraged the adoption of simple, yet effective interventions through improving health literacy and lifestyle with medical nutrition therapy, and provision of pre-conceptual counseling for the management and prevention GDM.

Asst. Prof. Mary Chong, National University of Singapore/Singapore Institute for Clinical Sciences, Singapore, presented various research findings on GDM and its Impact on Maternal and Birth Outcomes: An Asian Perspective as well as contributing modifiable and non-modifiable factors that increase the susceptibility of Asian women to...
GDM. One of the studies was the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study which revealed a continuous relationship between maternal glycemia and neonatal adiposity, further confirming the link from the HAPO study. Data from other studies also showed that physical activity, sleep and circadian eating time are associated with blood glucose levels in pregnant Asian women. She then elaborated on the national guidelines and programs for GDM management, alongside the challenges faced with their implementation, and highlighted a lack of international consensus on GDM diagnostic criteria for accurate comparison of its prevalence globally.

**Indonesia**

Dr. Rima Irwinda, University of Indonesia, Indonesia noted that the escalating trend of GDM in Indonesia would persist due to a projected increase of key risk factors such as obesity. She reported a study conducted in Makassar which demonstrated an increased risk of GDM due to cigarette exposure and consumption of less fiber and coffee. At present, only the Indonesian clinical practice guidelines developed by the Indonesian Task Force on Reproductive Diseases is available for use. Due to data scarcity, she hopes the country could conduct more epidemiological studies on GDM and develop national guidelines for GDM screening.

**Malaysia**

Dr. Mastura Ismail, Seremban 2 Health Clinic, Malaysia highlighted that the epidemic of obesity and diabetes mellitus in Malaysia is paralleling an increase in the number of diabetic women becoming pregnant. She delved into the Clinical Practice Guideline (CPG) Management of Diabetes in Pregnancy 2017, as well as the challenges and issues in the healthcare system, patients and healthcare providers that need to be addressed. Dr. Mastura shared that Malaysia has developed a registry for GDM patients for annual follow-up and emphasized the importance of applying a chronic care model encompassing key elements such as productive interactions between healthcare providers and patients, well-informed and empowerment of patients, self-management and decision support, and efficient clinical information system.

**Philippines**

Prof. Jossie M. Rogacion, University of the Philippines, Philippines shared that the GDM prevalence is on the rise. Cohort findings suggested that increasing BMI, family history of diabetes and hormonal contraceptive use could increase the risk of GDM. Recognizing its severe impacts on both the mother and infant, various strategies and interventions were implemented, often coupled with GDM management. She further shared that the Philippine Clinical Practice Guidelines (CPG) for diagnosis and management have been developed and recommended fundamental changes to be initiated to raise awareness of GDM. There should be an emphasis on lifestyle change and promoting public policies particularly in the health insurance system to improve overall diabetes care and outcomes in the country.

**Thailand**

While there is no available national-scale data on GDM prevalence, Assoc. Prof. Vitaya Titapant, Mahidol University, Thailand reported that the prevalence from hospital-based university reports in the last decade ranged from 4.1% to 16.1%. He pointed out that clinical practice guidelines and other guidelines from various institutions had contributed to a diversity of recommendations, resulting in differences in the prevalence and treatment of GDM and as well as disease outcome. Assoc. Prof. Charintip Somprasit, Thammasat University, Thailand further deliberated on GDM management, highlighting that early management after detection is crucial in achieving maternal glycemic control and advised to adopt a multidisciplinary approach towards management. She concluded that moving forward, there is a need to establish reliable national data on GDM, including its impact on various aspects such as pregnancy outcomes and society. Furthermore, efforts to improve early management and prevention of GDM in all healthcare levels as well as advocacy on a healthy lifestyle need to be driven to achieve lifelong prevention.

**Vietnam**

Assoc. Prof. Huynh Nguyen Khanh Trang, Pham Ngoc Thach University of Medicine, Vietnam shared that the prevalence of GDM from 2010 to 2011 was 20.3% using the IADPSG criterion. He noted that GDM is a community issue, especially in countries where rice is a staple food in Southeast Asia. This was evident from the consumption pattern among Vietnamese women at reproductive age, where a high intake of carbohydrate and low-fat diet, particularly cereal and starchy vegetables was noted. To tackle the growing prevalence of GDM in the country, he recommended mass screening for all pregnant women to be performed between 24 and 28 weeks and in the case where there are several high-risk factors. For GDM management, the first-line therapy for women diagnosed with GDM is medical nutrition therapy (MNT) as medical data recorded 75% to 80% effectiveness in outpatient clinics while a 2-h 75 g of postpartum OGTT should be administered between 4 to 12 weeks for women with GDM.
CONCLUSIONS
Through the sharing of research findings, experiences, and best practices during the seminar and workshop, challenges in addressing the issues of low birth weight, stunting, and GDM were identified. Workshop participants also discussed and recommended possible solutions to overcome these challenges.

Challenges Identified
- Gaps in measurement and reporting, lack of proper healthcare personnel training and manpower, as well as poor monitoring were noted as major issues that affect the true reflection of low birth weight and stunting situation in the region.
- Outcomes and effectiveness of interventions to tackle the persistence of low birth weight and stunting could be compromised by a lack of strong political commitment and prioritization for nutrition to translate into evidence-based, sustainable and impactful policies and strategies.
- Inadequate manpower and resources have contributed to failures in translating existing guidelines into clinical practices to better manage GDM.

Recommendations
- Multisectoral approaches with strong coordination and convergence need to be embraced to achieve accelerated progress in the region.
- Research examining data accuracy and root causes should also be given priority given its value in steering future policy planning and strategies.
- Harmonization of GDM screening, diagnosis and management guidelines among the ASEAN countries is envisaged, while considering various factors including different country priorities, contextual, cultural and ethnic issues.
- Creating greater awareness of GDM among mothers, doctors and healthcare workers, as well as optimizing postpartum care and monitoring are vital to easing the growing burden of GDM in the region.
- Enhancing health literacy is crucial in providing a conducive ecosystem to support education of healthy lifestyles starting from young.
- More epidemiological and longitudinal studies on the health impact of GDM on offspring and mothers in Southeast Asia should be encouraged.
Sustainable Food Systems and their Impact on Nutrition Security

Feeding a growing population, while ensuring the food is nutritious, has emerged as a major challenge faced by governments and health authorities of many developing countries. It is recognized that agri-food production and food supply systems need to be more productive and efficient, as well as sustainable with minimal negative impact on the environment.

Establishing key metrics and appropriate indicators to assess status, such as resilience of the food system, nutrition adequacy, dietary quality, and diversity, will help to identify and fill gaps, as well as measure progress towards attaining nutrition security.

To address these issues, ILSI SEA Region organized a symposium session titled “Sustainable Food Systems and Diets – Implication and Relevance for Nutrition Security”, on October 16, 2018, in conjunction with the International Rice Congress 2018 being held in Singapore.

The symposium session highlighted the challenges in achieving sustainable food systems and nutrition security in Asia; examined the utilization of metrics for intervention; discussed the harnessing of innovation and new technologies; and explored strategies to transform nutrition security challenges into opportunities for the future.

The symposium commenced with a presentation by Dr. Regina Moench-Pfanner, CEO and founder of ibn360 Pte. Ltd, Singapore, on the topic of Nutrition Security – Dimensions and Challenges in Asia. In 2013, the Asia Development Bank pointed out that Asia Pacific’s drive for food security has focused too narrowly on quantity, and that the level of malnutrition is high in some Asia Pacific countries. In addition, FAO and UNICEF had published a report on food security and nutrition in the world for the first time in year 2018. The report noted that the while the undernourishment situation is stable in most Asian countries, however, greater food security is contributing to the problems of overweight and obesity. This partly explains the coexistence of both forms of malnutrition, namely under- and over-nutrition, in many countries.
Malnutrition in Asia is not due to inadequacy in food supply, but the food quality or diet quality. Dr. Moench-Pfanner emphasized that achieving food security does not necessarily result in nutrition security. She also highlighted several challenges in achieving nutrition security: 1) the diversity of crops has declined by 75% since the 20th century, narrowing the ability to supply diverse food products; 2) nutrient-rich foods are more expensive than energy-dense foods; and 3) populations in less developed countries tend to surge faster than those in more developed countries. Thus, parallel efforts are needed in making nutrient-dense, fresh foods as affordable as energy-dense foods. Initiatives that acknowledge and address the complexity of food security and nutrition security are also needed.

Dr. Jessica Bogard, CSIRO, Australia, then gave a presentation on Food System Metrics and Indicators – Approaches and Application in Assessing Nutrition Security. Dr. Bogard said that food systems are inherently complex, involving numerous domains, sectors, and actors interacting throughout and across time and space. The High Level Panel of Experts on Food Security and Nutrition incorporates biophysical, technical, political, economic, socio-cultural, and demographic drivers into the conceptual framework and food systems; interacting with food supply chains, food environmental impacts; and diet, nutrition, and health outcomes. However, she pointed out that there are gaps in our understanding, and a clear need for a coherent framework. She provided an overview of several existing frameworks, such as the FAO Sustainability Assessment of Food and Agricultural Systems; FAO Nutrition Sensitive Agriculture compendium of indicators; Data4Diets; International Network for Food and Obesity/NCDs Research, Monitoring and Action Support; and the ILSI - 7 Food System Metrics for Sustainable Nutrition Security.

Dr. Bogard said that each framework has its own strengths and limitations. While one of the key challenges in applying such frameworks is the lack of quality data, especially in low and middle-income countries, available and appropriate data sources should still be utilized. The science community has a crucial role in ensuring that sustainable food system indicators are interpreted appropriately according to the contexts in which they are applied. This includes an understanding of trade-offs and synergies across multiple food system functions. The application of indicator frameworks is an essential tool for guiding decision-making in the transition towards healthy and sustainable food systems.

Dr. Felipe Dizon, World Bank, presented on Food Prices, Diet Quality & Nutrition in South Asia. He pointed out that food affordability has been one of the major issues that affect food accessibility in South Asia, where the price of nutritious foods is higher than less nutritious foods. A previous study showed that nutritious foods (e.g., dairy, poultry, and seafood) in calorie price per ratios could be 6 times more expensive in low-income countries (LIC) than high-income countries (HIC). Thus, the South Asian Food and Nutrition Security Initiative (SAFANSI) initiates research to measure the cost of nutritious foods in South Asia, and links food prices to diet quality in Bangladesh.

The food-based dietary guidelines (FBDGs, the recommended diet designed to provide both nutrient adequacy and prevention of diet-related non-communicable disease within a culturally-acceptable diet) of 8 countries were reviewed. Dr. Dizon and the research team discovered that the cost of nutritious diets (meeting FBDGs) is more prohibitive than the cost of meeting only calorie-based food needs. The cost of recommended diets (CoRD) varies substantially within the country. Besides that, the cost of nutritious food basket is rising faster and is more seasonal than the cost of a typical food basket.
In the second part of this study, the focus was on Bangladesh food prices and diet quality. Research shows that the diet quality in Bangladesh improved from 2011 to 2015. Bangladeshis are consuming foods from more food groups, although intake of several recommended food groups (e.g., vegetables, fruits, dairy, meats, etc) is still below the recommendations of the dietary guidelines. Also, higher cereal and vegetable prices are negatively correlated with various measures of diet quality.

Next, Prof. Paul Teng, Nanyang Technological University, Singapore shared a presentation on Harnessing Agricultural Innovation and Technology for Sustainable Food System & Nutrition Security. Agriculture for nutrition has become more meaningful than agriculture for food security. The sustainable food system is a food system that delivers food and nutrition security for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised. Technological innovation and changes in agriculture started with the Green Revolution in the 1960s, which consisted of improved seeds, fertilizers, pesticides, irrigation and mechanization to increase the production yield. Subsequently, biotechnology was deemed to be the second wave, followed by integrated digital technologies (Agtech, Fintech, and food without agriculture).

Prof. Teng explained how technology is being harnessed in the food supply chain, and how the digital revolution of agriculture is facilitating the change from physical-based farming to knowledge-based farming. Coupled with innovations in robotics and food technology, more diverse food is becoming available to meet the nutrition needs of an urbanizing world. Yet, the challenge remains to ensure that the benefits of innovation equally benefit all sectors of society, from rich to poor.

Mr. Peter Sprang, International Rice Research Institute (IRRI), Philippines, and Sustainable Rice Platform (SRP) then presented on Sustainable Rice Platform Opportunities as a Strategy towards Nutrition Security. SRP was founded by IRRI and the United Nation (UN) Environment Program (the leading global environmental authority) to promote resource efficiency and sustainability in trade flows, production and consumption operations, and supply chains in the global rice sector. The SRP pursues public policy development and voluntary market transformation initiatives to provide private, non-profit and public actors in the global rice sector with sustainable production standards and outreach mechanisms that contribute to increasing the global supply of affordable rice, improve livelihoods for rice producers and reduce the environmental impact of rice production. Mr. Sprang highlighted some examples of the efforts by SRP, such as the Standard on Sustainable Rice Cultivation, Performance Indicators for Sustainable Rice Cultivation and the SRP Food Safety/ Nutrition Indicator Table.

CONCLUSIONS
An exciting Panel Discussion was held at the end of the symposium. Issues and recommendations highlighted include the following:

- Nutrition security and food security face extremely complex issues and challenges when it comes to implementation. Multisectoral stakeholders need to work together to address these complexities.
- Involving multisectoral stakeholders allows the drawing of diverse expertise from the stakeholder groups to better tackle these complicated issues.
- While new technologies are developing at an unprecedented rate, there is still significant resistance in adopting such technologies to address nutrition security.
- Targeted approaches and strategies are needed to tackle issues at various levels, as well as the concerns of different target groups.
Training Workshop on Food and Nutrition Labeling and Claims

Since 2001, ILSI SEA Region has facilitated a series of seminars and workshops for regulators, researchers and scientists, and relevant food industry personnel from the region to discuss issues on nutrition labeling and claims. The meetings serve to provide updates on international and regional developments in nutrition labeling, nutrition and health claims and related issues in Southeast Asia, and to provide learning opportunities and explore areas for harmonization.

Following the success of the first National Workshop on Food and Nutrition Labeling & Claims organized by ILSI SEA Region and held on November 9, 2017 in Nay Pyi Taw, Myanmar, this 2nd National Workshop on Food and Nutrition Labeling & Claims in Myanmar was organized with co-organizer Food and Drug Administration (FDA) Myanmar and held on December 13, 2018 in Nay Pyi Taw.

The 1-day workshop was attended by the Director General of Myanmar FDA, Prof. Dr. Khin Zaw, Deputy Director, Dr. Htin Lin, and 50 officials from the various national food and nutrition agencies. It commenced with a status update on the food and nutrition labeling and claims status in Myanmar by Ms. Ohnmar Soe Win, Myanmar FDA. She noted that the guidelines and standards of Codex Alimentarius Commission were adopted as a national reference. The FDA has also drawn up the new food labelling regulation which has been submitted for approval and is likely to be implemented in 2019.

Dr. E Siong Tee, ILSI SEA Region Malaysia Country Committee, provided an extensive overview of and update on the international Codex food and nutrition labeling and claims guidelines as well as recent developments in Codex Committee on Food Labelling (CCFL) and Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU). His presentation focused on the 3 guidelines available from Codex: CAC/GL 2-1985 Guideline on Nutrition Labeling, CAC/GL 23-1997 Guidelines for Use of Nutrition and Health Claims, and CAC/GL 1-1979 General Guidelines on Claims.
He encouraged national legislation to consider adopting the international guidelines available to achieve international harmonization in food quality and safety regulation.

Ms. Noor Ul-Aziha Muhammad, Food Safety and Quality Division (FSQD), Ministry of Health (MOH) Malaysia then shared *Malaysia’s experience in adapting Codex’s nutrition labeling and claims guidelines*. She informed the participants on the importance of nutrition labeling and claims regulation, as well as the benefits for the food industry and the consumers. She explained the process on the development and amendment of the regulations, and introduced the 12 national expert committees and the advisory committee who worked together when drafting the Food Regulations 1985. Currently, there are proposed amendments to the Malaysia food regulations such as adopting the new Codex expanded list of nutrient reference values (NRV).

Next, Ms. Pauline Chan, ILSI SEA Region, Singapore, shared on the *current status of nutrition labeling and claims in ASEAN*, noting that they varied among the regional countries. She explained that harmonization of nutrition labeling and claims regulations in the region will help not only with the improvement of consumer understanding of key messages on food labels, but also the reduction of technical barriers to the commercial distribution of foods and beverages in the region.

Ms. Chan elaborated on ILSI SEA Region’s harmonization efforts in this area, where seven priority areas of nutrition information panel (NIP) were identified for potential harmonization in the ASEAN region through a series of workshops participated by the representatives from the regional regulatory agencies and experts in the region. The outcomes of the workshops were shared with ASEAN Consultative Committee on Standards and Quality (ACCSQ)’s Prepared Foodstuff Products Working Group (PFPWG) which is the main ASEAN body for regulatory harmonization in the food sector. ILSI SEA Region will continue to provide the platform to assist PFPWG and the ASEAN regulators to update on their regulations regarding nutrition labeling and claims, and to facilitate discussions on harmonization.

Nutrition information displayed on packaged food products is important for consumer choices. In his presentation on *communication using nutrition labels and claims in Thailand*, Mr. Araya Rojjanawanichakorn from the Food and Drug Administration, Thailand, shared the three different formats used on packaging in Thailand: Nutrition Information Panel (NIP), Guideline Daily Amounts (GDA), and Healthier Choice Symbol. He also highlighted that consumer insight is the most crucial in communication planning and that messages should be clear and simple. Communication strategies used a combination of offline, online and on-ground methods, whereby the most effective channel was via online methods. Consumer-friendly content, such as video clips, infographics, motion graphics and posts from influencers, was disseminated using in social media.

Lastly, Dr. Tee discussed on *tolerance limits for nutrients claimed on packaging*, why they are required and how regulatory authorities in some countries set these limits. It was recognized that nutrition labelling and nutrient content claims may not be exactly at the level obtained upon analysis of the food product, and that a certain amount of deviation or tolerance should be permitted between the analysed and declared values. However, the content of nutrients should not deviate substantially from labelled values to the extent that it could mislead consumers. Dr. Tee noted that there is no uniform approach towards regulating permitted tolerance limits and efforts to harmonize approaches in tolerance limits in Southeast Asia is encouraged to facilitate international trade.

The workshop participants of different departments within Myanmar FDA and government ministries were then split up into different groups for a roundtable discussion and simulation on drafting a nutrition labeling regulation. Due to their different backgrounds and expertise, the activity gave the participants an opportunity to brainstorm together on the potential information that is required for their country’s nutrition labeling regulation, as well as to identify and share potential challenges and solutions.

ILSI SEA Region thanked the Myanmar FDA for yet another successful collaborative workshop, and the regional experts who willing to share their knowledge and experience with the participants.
Risk assessment is a fundamental aspect of risk management in food safety. Although the World Health Organization (WHO) has codified principles of risk assessment, there is a need to broaden understanding of the principles, and to teach practical data requirements and analysis procedures. To address these issues, the World Bank has commissioned learning modules on Food Chemical-Contaminant Risk Assessment under their Global Food Safety Partnership (GFSP).

Developed by experts in this field, the learning modules are targeted at food safety risk assessors to facilitate their understanding of risk assessment and specifically food chemical-contaminant risk assessment. The modules aim to build and enhance capability in risk assessment within the ASEAN region.

In 2016, ILSI SEA Region and the Agri-food & Veterinary Authority, Singapore (now known as Singapore Food Agency or SFA) organized a workshop in Singapore to discuss and review the content of the draft food chemical risk assessment training module, as well as to plan the next steps for the future global roll-out of the program. It was agreed that the module would be further refined, and this has since been completed.
WORKSHOP OBJECTIVES
To facilitate the usage of this refined training module, ILSI SEA Region and SFA organized a follow-up Workshop on Food Chemical Risk Assessment from March 19 - 21, 2019 in Singapore. The objectives of this workshop were to:

1. Provide an overview of general knowledge and basic concepts pertaining to food chemical-contaminant risk assessment,
2. Share the practical approaches to food chemical risk assessments through case studies from in the region, and
3. Discuss the status and challenges faced by risk assessors in their respective countries.

WORKSHOP FACILITATION
This workshop was facilitated by Dr. Paul Brent, Principal Scientific Consultant of Global Food and Chemical Risk Assessment and Risk Assessment Solutions, who is also the lead consultant for GFSP Food Chemical Risk Assessment Program; Dr. Pharrunrat Tanaviyupakdee, Assistant Professor at Mahidol University, Thailand; Dr. Puspo Edi Giriwono, Assistant Professor at Bogor Agriculture University (IPB), Indonesia and an executive secretary at South East Asian Food & Agriculture Science and Technology (SEAFAST) Center, IPB, Indonesia; Dr. Samuel Godefroy, Professor of Food Risk Analysis and Regulatory Systems at the University Laval, Canada and Dr. Silvia Dominguez, University Laval, Canada.

The workshop focused on the basics of food chemical risk assessments, food chemical toxicity, exposure assessment, safety assessment of genetically-modified foods and novel foods. Two regional case studies were shared: Exposure Assessment of Sweeteners in Thailand and Risk Probability of Benzo-a-pyrene in Indonesian Grilled Chicken.

During the discussion on status and challenges faced by risk assessors in the ASEAN region, several risk assessors pointed out the urgent need to include risk managers in future risk assessment training or leadership training. This would allow the risk managers to have better understanding of risk assessments and ease the decision-making process.

Challenges relating to data collection and sharing in some countries were also highlighted, as different agencies are needed to work together on a risk assessment project. These comments will be taken into considerations for future capacity building activities in the region.
Meetings

**CONFERENCE ON HUMAN VARIABILITY IN RESPONSE TO FOOD AND NUTRIENTS**
Building the Bridge to Personalised Nutrition - Challenges and Opportunities for Industry, Public Health and Academia

May 15, 2019 | Stamford Plaza Sydney Airport

Population-based studies in food and nutrition have been essential in contributing to overall human well-being. However, improved understanding of ‘individual human variation’ in nutrient requirements has awaited advancements in nutrigenomics and the mathematical and social sciences. For example, the ‘omics sciences (genomics, proteomics, metabolomics)’ are providing new insight and understanding that can be applied to personalised nutrition with the ambitious objective of one-to-one product design.

This 1-day conference will explore the nature of individual human variation in response to food choice and nutrient intake and how that may initiate a new era of opportunity for personalised nutrition.


**SCIENCE SYMPOSIUM ON HUMAN VARIABILITY & PERSONALIZED NUTRITION**
Opportunities for Research, Public Health Benefits and Food Innovation

May 17, 2019
9:00am - 5:30pm | Block MD11, Clinical Research Centre (CRC) Auditorium, National University of Singapore

Human Variability refers to the underlying differences in each individual’s metabolism and nutritional requirements, due to the vast range of genomic and physiological characteristics. In recent years, scientific studies on Human Variability have advanced tremendously, with the “Omics” technologies in the forefront. This has led to the development of “personalized or precision medicine”, with potential extension to “personalized nutrition” targeted at individuals.

This 1-day science symposium will aim to share the latest science and research on human variability, health and nutrition requirements of relevance to the Asian population; consider potential applications of personalization of health interventions and products in the fields of food and nutrition; explore opportunities for research, development and innovation in the food supply to achieve individual and public health benefits; and discuss issues relating to regulatory framework and oversight, consumer communications and guidance on personalized nutrition.


This will be the first state-of-the science meeting on food packaging to be organized by ILSI SEA Region. The symposium will bring together international and regional experts; food safety and food packaging professionals; representatives from government and regulatory agencies; as well as academics and researchers from Southeast Asia and other regions.

This 2-day symposium aims to share emerging trends and developments in food packaging technologies and products; discuss issues related to food packaging safety and methodologies on safety assessment of food chemicals and food contact materials; highlight practices and concerns of packaging material and their impact on the environment; provide updates on scientific measures and regulatory framework and status of food contact material in different Southeast Asian countries; and facilitate discussion on multi-stakeholders’ collaboration and effective risk-benefit communication.

### ILSI SEA Region Activities 2019-2020

#### Meetings

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<td>April 24-25, 2019</td>
<td>Kuala Lumpur, Malaysia</td>
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<td>ILSI SEA Region Annual Meeting 2019</td>
<td>April 23, 2019</td>
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<td>Science Symposium on Smart Eating – Harnessing Innovative Approaches &amp; New Technologies for Health and Sustainability</td>
<td>April 23, 2019</td>
<td>Kuala Lumpur, Malaysia</td>
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<td><strong>Food and Nutrients in Health and Disease (FNHD) Science Cluster</strong></td>
<td>May 15, 2019</td>
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<td>Conference on Human Variability in Response to Food and Nutrients: Building the Bridge to Personalised Nutrition – Challenges and Opportunities for Industry, Public Health and Academia</td>
<td>May 17, 2019</td>
<td>Singapore</td>
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<td>Symposium on Physical Activity &amp; Optimal Performance – Status, Assessment and Programs</td>
<td>October 22-24, 2019</td>
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<td>ILSI – sponsored Sessions @ Asian Congress of Nutrition 2019</td>
<td>October 22-24, 2019</td>
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<td>Seminar on Food Fortification</td>
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<td>5th Asian Conference for Frailty and Sarcopenia in Taipei - Scientific Session on Elderly Nutrition</td>
<td>October 22-24, 2019</td>
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<td>Scientific Session on Micronutrient Fortification in Food</td>
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<tr>
<td>Regional Symposium on Physical Activities, Nutrition &amp; Health Impact</td>
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#### Calendar of Activities
### Meetings

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<tr>
<th><strong>Nutrition and Food Guidance for Public Health (NFGPH) Science Cluster</strong></th>
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| **Seminar on Food Fortification**  
*Co-organized with Vietnam Country Committee* | 3rd/4th Quarter 2019  
*Vietnam* |
| **Regional Symposium & Workshop on Food Composition Data, Food Consumption & Nutrients Intake in ASEAN** | 4th Quarter 2019 |
| **Scientific Session on Micronutrient Fortification in Food**  
*In conjunction with the Global Micronutrient Forum to be held in Thailand* | 1st Quarter 2020 |
| **11th Seminar and Workshop on Nutrition Labeling, Claims and Communication Strategies** | 2nd Quarter 2020 |

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<tr>
<th><strong>Food Safety and Risk Assessment (FSRA) Science Cluster</strong></th>
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| **Workshop for the GFSP Food Chemical Risk Assessment**  
*(By Invitation Only)*  
*In collaboration with AVA, Singapore* | March 19-21, 2019  
*Singapore* |
| **Seminar on Food Safety Risk Communication**  
*In collaboration with Thailand Country Committee and supported by ASEAN PFPWG* | April 2, 2019  
*Bangkok, Thailand* |
| **ASEAN Regional Workshop on Food Safety Risk Communication**  
*(By Invitation Only)*  
*In collaboration with Thailand Country Committee and supported by ASEAN PFPWG* | April 2-3, 2019  
*Bangkok, Thailand* |
| **1st Food Safety and Nutrition Assurance Seminar Series**  
*Organized by Philippines Country Committee* | May 23, 2019  
*Manila, Philippines* |
| **Symposium on Scientific Development of Food Packaging: Innovation, Safety and Sustainability**  
*In conjunction with 11th ILSI BeSeTo Meeting*  
*In collaboration with Malaysia Country Committee and FSQD, MOH, Malaysia* | September 24-25, 2019  
*Penang, Malaysia* |
| **11th ILSI BeSeTo Meeting**  
*In collaboration with ILSI Asian Entities* | September 26-27, 2019  
*Penang, Malaysia* |
| **Conference on Whole Genome Sequencing**  
*Organized by Australasia Country Committee* | October 31, 2019  
*Auckland, New Zealand* |

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<tr>
<th><strong>Sustainable Food Systems (SFS) Science Cluster</strong></th>
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</table>
| **Seminar on Stacked GM Products - Safety Assessment and Regulatory Update**  
*(By Invitation Only)* | August 2019  
*Singapore and Malaysia* |

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<th><strong>Others</strong></th>
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| **2019 ILSI Annual Meeting & Science Symposium** | January 8 – 13, 2019  
*Florida, USA* |
| **2020 ILSI Annual Meeting & Science Symposium** | January 17-21, 2020  
*San Jose, Costa Rica* |
| **ILSI SEA Region Country Committees events under planning**  
*Details will be provided when available.* |  
*ASEAN and Australasia* |
## Research, Meeting Reports, and Collaborative Projects

### Food and Nutrients in Health and Disease Science Cluster

- **Global Comparison of How Short-term Blood Glucose Response to Food is Measured and Translated**
  - Co-lead with ILSI North America
  - Initiated

- **Patterns of Sodium Intake and Sources of Sodium Among Filipinos Aged 19 to 50 Years: Findings from the 2008 National Nutrition Survey**
  - In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines
  - Journal review completed; paper under revision

  - In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines
  - Submitted to journal; under review

- **Data Analysis: Levels and Sources of Sugar Intake in the Philippines**
  - In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines
  - On-going

- **Survey on Physical Activity Assessment, Status, Data and Programs**
  - In collaboration with the Food and Nutrition Research Institute (FNRI), Philippines
  - Proposed

### Technical Committee on Maternal, Infant and Young Child Nutrition

- **Levels and Sources of Omega-3 Fatty Acid Intake Among Malaysian Children Aged 6 to 23 Months in an Urban Area**
  - In collaboration with the Universiti Sains Malaysia, Malaysia; University of the Philippines Diliman, Philippines; and International Medical University, Malaysia
  - Proposed; in discussion

- **A Review of the Situation and Factors Affecting the Nutritional Status of Filipino Pregnant Women**
  - In collaboration with the Institute of Human Nutrition and Food, College of Human Ecology, University of the Philippines Los Baños, Philippines
  - On-going; report under preparation

- **Vitamin D Status and its Correlates among Pregnant Thai Adolescents**
  - In collaboration with Mahidol University, Thailand (original study)
  - On-going; report under preparation

- **Topic: Maternal Nutrition and Birth Outcome in Malaysia: Current Status and Risk Factors (review)**
  - On-going

### Nutrition and Food Guidance for Public Health Science Cluster

- **Review of Nutrition Labeling, Nutrition and Health Claims Regulations in Asia**
  - In collaboration with ILSI Asian Entities
  - Completed; available in May 2019

- **Measurement of Total Sugar Content of Commonly Consumed Foods in Malaysia**
  - In collaboration with Malaysia Country Committee, Ministry of Health, Malaysia and Institute of Medical Research, Malaysia
  - Initiated

### Food Safety and Risk Assessment Science Cluster

- **Study on Dietary Exposure of Sweeteners in Thai Consumers**
  - In collaboration with Institute of Nutrition, Mahidol University, Thailand
  - Completed; publication under final preparation

### Special Projects and Others

- **ILSI SEA Region Contribution to the One ILSI Project on Nutrition, Health and Wellbeing: Multi-Country Survey - Profiling the Elderly and Review on Healthy Ageing**
  - Thailand: in collaboration with Mahidol University; Philippines: in collaboration with University of San Carlos; Malaysia: in collaboration with Universiti Kebangsaan Malaysia (Published)
  - On-going; 1 paper published, 2 papers under preparation
### Peer-Reviewed Scientific Journals

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Journal</th>
<th>Volume/Issue</th>
<th>Pages/DOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence of Malaysian Adults’ Energy and Macronutrient Intakes to National Recommendations: A Review and Meta-Analysis</td>
<td>Shahar, S., Jan Bin Jan Mohamed, H., De los Reyes, F. &amp; Amarra, M.S.</td>
<td>Nutrients</td>
<td>10</td>
<td>1584</td>
</tr>
<tr>
<td>Consumption and Sources of Added Sugar in Thailand: A Review</td>
<td>Kriengsinyos, W., Chan, P. &amp; M. S. V. Amarra.</td>
<td>Asia Pac. J. Clin. Nutri.</td>
<td>27(2)</td>
<td>262-283. doi: 10.6133/apjcn.042017.08</td>
</tr>
<tr>
<td>Consumption and Sources of Added Sugar in Indonesia: A Review</td>
<td>Atmarita, Imanningsih, N., Jahari, A. B., Permaesih, I. D., Chan, P. &amp; M. S. Amarra.</td>
<td>Asia Pac. J. Clin. Nutri.</td>
<td>27(1)</td>
<td>47-64. doi: 10.6133/apjcn.042017.07</td>
</tr>
</tbody>
</table>

**Manuscript under review and revision:**

Health Access and Nutritional Issues Among Low-Income Population in Malaysia

**Editors:** Suzana Shahar (Universiti Kebangsaan Malaysia), Sharifa Ezat Wan Puteh (Universiti Kebangsaan Malaysia), Sofia Amarra (ILSI Southeast Asia Region)

### Online Monographs/Reports

<table>
<thead>
<tr>
<th>Title</th>
<th>Details</th>
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<tr>
<td>Report on Food Consumption Survey: Review of Status in Southeast Asia Region</td>
<td>Published in April 2019 on ILSI SEA Region’s website</td>
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<tr>
<td>ILSI SEA Region Functional Foods Monograph 2017</td>
<td>Published revised version (August 2018) on ILSI SEA Region’s website</td>
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<tr>
<td>Report on Food Composition Tables: Review of Status in Southeast Asia Region</td>
<td>Published January 2017 on ILSI SEA Region’s website</td>
</tr>
<tr>
<td>Monograph 2 Volume 1: Safety Assessment of Low- &amp; Non-Calorie Sweeteners (LNCS)</td>
<td>Under review for publication</td>
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<tr>
<td>Updated Report on Regulatory Status of Micronutrient Fortification in Southeast Asia</td>
<td>On-going</td>
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Indonesia • Malaysia • Philippines • Thailand • Vietnam

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