CLOSING REMARKS by Aman Wirakartakusumah, Presiding Officer, IAFoST

21 October 2021, IUFoST Working Group on Education, Emerging interest and Future Food Areas – Roundtable with three invited speakers: Dr. Sam Saguy, Professor Emeritus of Food Engineering and Biotechnology, The Hebrew University of Jerusalem Israel; Dr. Ferruh Erdogdu, Professor of Food Engineering, Ankara University, Turkey; Dr. Gunter Kuhnle, Professor of Nutrition and Food Science, University of Reading, UK.

In the UN Food Systems Summit 2021 it was stated the importance of capacity building, in IUFoST declaration for the occasion of World Food Day Oct 16, 2021, it also underlined the importance of education and capacity building to understand the science of food and nutrition.

All three eminent speakers in this Education Roundtable on *Future Development of Food Science Education* gave an excellent overview on the context of food science and technology, nutritional sciences and engineering. While the three speakers mostly focused on formal and degree programs at the university levels, there are more open opportunities and needs for non-formal and literacy on food science and technology by the community, government and industry. IUFoST has given a special attention on standardization by recognizing the undergraduate curriculum for food science and technology in general that covered the aspect of chemistry, biochemistry, microbiology, nutrition, processing, and engineering, since 2012, while the assessment for food safety curriculum started in 2017.

In this presentation, it is explained that food science, technology and engineering are at the heart of disruptive evolutionary processes where there has been exponential changes in science, innovation and digital transformation. I quote some of the importance and thoughtful ideas in anticipating future food science education.

Future food science education Needs for innovation, artificial intelligence, machine learning, big data, Internet of things, 3D printing, robotics, gene editing, microbiome, Enginomics, sustainability, nutrition, health and wellness, bioavailability and personalization. Its curricula should be updated and simultaneously address the evolving digital virtual requirements.

I reiterate what Prof Sam said on the importance of Five recommended paradigm shifts: 1. New mindset, open innovation and entrepreneurship. 2. Four-Helix partnerships and ecosystems. 3. Information integration and personalization. 4. hybrid teaching, lifelong learning/unlearning, and, 5. Life (“soft”) skills and adaptability.

When we are elaborating the importance of engineering, Engineering` is science and math application to solve problems, and for prediction. It is now combines with designing, therefore, food engineering is an evolved discipline.

Historically, the initial applications of food engineering focused on the chemistry-oriented studies with emphasis on physical – chemical properties in the area of (food) science and technology, the recent trends are towards to process design, manufacturing and even molecular biology and nanoscale science.

This brings out the requirement of in-depth knowledge of math, physics and computer applications such as simulations and computer-aided design. → and the possible engineering applications of drone designing, robot creation, 3D printing

In food processing and food science/technology concept, improved food safety and quality assurance with applied simulation, artificial intelligence and machine learning approaches, digitalization, the use if IoT and big data have to be considered in food engineering development. In developing engineering please do not leave behind the importance of arts, culture and human creativity that leads to innovation.

There is a very interesting observation on the evolution of nutritional sciences into food science and technology, and role of Health and environmental consciousness being the main developmental drivers for food innovation.

It is sad to hear of the existence of a separation between nutrition research and food science. Nutrition and the health effects of foods have become independent academic programs – With little or no food science content, or knowledge and understanding of the subject, the nutritionists have ignored food technology and processing. In Indonesia case: 2020 we established an Academy of Food Science and Nutrition under the Indonesian Academy of Sciences.

We need to create an environment where conventional food sciences are able to flourish along with the nutrition and health effects of foods – not one at the expense of the other

In anticipating the Development of Future of Food Science Education, Many works need to be done by the education committee of IUFoST → gap analysis, strong leadership, and paradigm shifts. But we may use customized approach to fit into local needs. It is obvious that Food S T education is a multidisciplinary approach.

Today's presentations are excellent and truly inspiring for all of us, we are grateful for Prof Sam Saguy, Prof Gunter Kuhnle, Prof Ferruh Erdogdu, Dr Fatima Miller and Dr Azis Sitanggang as Moderator for their excellent contributions. and Judith Thank you for all education working group members chaired by Prof Christina Silva, and special thanks go to all participants all over the world for attending this webinar.

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