



## Sam Saguy

*Professor Emeritus, Food Innovation & Technology  
The Robert H. Smith Faculty of Agriculture, Food & Environment  
The Hebrew University of Jerusalem, Israel*

### Bio

DSc and MSc in Food Engineering and Biotechnology, and BSc in Chemical Engineering, Technion, Haifa, Israel. Main research: open innovation, new product development, consumer research, modeling, kinetics, shelf life, optimization, rehydration, frying and wetting. Executive Group Member, European Academy of Food Engineering (EFFoST), Editorial Scientific Board (J. Food Engineering), IFT Press Editorial Advisory Board. Fellow (IFT, IUFoST, ISEKI), Lifetime Achievement Award (IAFE), Academy Member (IAFoST), Certified Food Scientist, CFS (IFT), Visitante Distinguido de la Universidad Nacional de Cordoba (UNC), Argentina. Academic Life Time Achievement Awards: ICEF, Food Industry Association-Manufacturers Association of Israel. Global industrial affiliation (>10 years): Molson Coors Brewing Company, US; Nestlé, Switzerland & US; The Pillsbury Company & GrandMet, US; Marks & Spencer, UK. Managing Associate (11 years) and Founder (SME): MJI, Israel. Publications: 117 peer review papers, 3 edited books, 21 book chapters and 6 international patents.

### Abstract

#### **Reinventing FE Vision and Strategy for Today's Challenges and Future Opportunities**

**Panel moderator:** Sam Saguy

**Panel members:** Dennis Heldman, Gail Bornhorst, Keshavan Niranjana, Sean Cotter, Sudhir Sastry

The food engineering (FE) profession, mainly in the US is faced with mounting challenges due to increased competition from adjacent academic domains, continuous decline in students' enrollment, and diminished industrial and governmental support for basic and applied research. Furthermore, the accelerated progress in other fields (e.g., computer science, information, internet of things, virtualization, molecular biology, personalization, health and wellness, [H&W]) and the acute needs to address both local and global issues (e.g., safety, water and land scarcity, waste management, nutrition security, expanding population, aging tsunami) call for immediate paradigm shifts for the FE profession. FE leadership has an obligation to proactively implement necessary steps to facilitate the transition from the past that focused mainly on low cost and high throughputs to foods that are offering additional dimensions and meeting new challenges and requirements. Three paradigm shifts are suggested. Firstly, redrawing FE's vision to be founded on science and technology and interfacing with other adjacent disciplines (e.g., chemistry, microbiology, biosciences, nutrition, molecular biology, material science, computer science, medicine). FE missions should be expanded to leverage technology, innovation and industrial processing addressing global needs (e.g., feeding the world, sustainability, social responsibility, safety, food security). Integrating the whole value chain stakeholders (e.g., research, education, consumers, industry, suppliers and regulations) should be also a part of the new strategy. The 2<sup>nd</sup> paradigm shift calls for embracing disruptive- and open innovation for promoting partnerships, entrepreneurship and a proactive role in the 4-helix innovation ecosystem (academia-industry-government-private sector). Promoting a new generation of FE-trained entrepreneurs for developing new innovative businesses should also be considered. The 3<sup>rd</sup> paradigm shift focuses on *Enginomics* that integrates process, product and H&W (e.g., bioavailability, personalization, nutrigenomics, aging, microbiome, signaling at a molecular scale, medicine). Redrawing FE blue print future program including developing new competences, curricula, culture and mind-set offers enormous challenges and vast opportunities, and we must not fail to try.