

BrIAS Workshop

Fermented Foods & Health

March 3rd 2023, 13.30 – 17.30 CET

- Physical location: Salle Solvay, Building NO, 5th Floor, ULB Campus La Plaine
Online: Microsoft Teams through this [LINK](#)
Organizers: Antonia Matalas & Frits Heinrich
- 13.30 – 13.45 *Welcome & Introduction to BrIAS.*
Dr. Frits Heinrich
Vrije Universiteit Brussel / BrIAS Program Director
- 13.45 – 14.15 *Unravelling the concerns of home-fermenters. A systematic evaluation of online comments.*
Dr. Antonia Matalas
School of Health Sciences and Education, Harokopio University Athens (HUA)
- 14.15 – 14.45 *Fermented Grains in Health and Disease Prevention.*
Dra. Juana Frías
Instituto de Ciencia y Tecnología de Alimentos y Nutrición
- 14.45 – 15.15 *SOURDOMICS (CA18101) – Sourdough biotechnology network towards novel, healthier and sustainable food and bioprocesses.*
Dr. Biljana Kovacevik
Faculty of Agriculture, “Goce Dalchev” University – Shtip (UGD)
- 15.15 – 15.45 *Biotechnology in food quality and sustainability.*
Dr. Dimitris Tsaltas
Cyprus University of Technology
- 15.45 – 16.00 *Coffee Break*
- 16.00 – 16.30 *Dietary advice on meat and dairy (1920s-2020s): science, confusion, power, and impact.*
Francesca Lemmens
Vrije Universiteit Brussel
- 16.30 – 17.00 *The FerFood.CH project - From the genome of lactic acid bacteria to the metabolic response of humans having ingested fermented foods*
Dr. Guy Vergères
Agroscope
- 17.00 – 17.30 *Final Discussion*

Abstracts

Unravelling the concerns of home-fermenters. A systematic evaluation of online comments.

Dr. Antonia Matalas

School of Health Sciences and Education, Harokopio University Athens (HUA)

Despite the overwhelming trend of consuming nutritionally enhanced ready-to-eat foods and meals, a growing interest in the preparation and consumption of homemade foods is currently being observed among people in urban centers. Having as a main goal to understand the concerns and perceptions of people who are engaged in preparing homemade non-alcoholic fermented beverages, we conducted a systematic content analysis on the information shared in the web. Our study provides some insight into the variability, preparation methods, and the consumption practices of these beverages in the western world, where this group of food products have received little attention to date. Kefir, kombucha, ginger beer and many other artisanal cultured beverages, originating from different parts of the world, have found their place in the diets of a special community of people. From the analysis of the comments of the visitors to the webpages we concluded that the most common themes of concern were health issues, methodology of preparation, organoleptic characteristics of the beverages and nutritional information. In addition, the comments hosted many questions about food wasting and the cost of the final products.

Fermented Grains in Health and Disease Prevention.

Dra. Juana Frías

Instituto de Ciencia y Tecnología de Alimentos y Nutrición

Juana Frias BSc, PhD is a Senior Research Scientist of the Spanish National Research Council (CSIC) and the director of the Institute of Food Science, Technology and Nutrition. She graduated in Pharmacy Sciences and gained her PhD at University of Alcalá de Henares (Spain). She is a leading expert on the grain legumes and their biotechnological processing to enhance nutritional and biofunctional properties and I has a long-standing interest in how functional ingredients affects health. She currently heads GRAINS4HEALTH research group at the ICTAN carrying out studies on the production, characterization and validation of biologically active ingredients from grains of food interest (legumes, cereals, pseudocereals and side streams) through sustainable biotechnological processes. One of these processes is fermentation tailoring different approaches of optimization, modelization, development and validation to obtain nutritive and healthy food, and functional ingredients to contribute in the reduction of the onset of high prevalent chronic diseases and addressing to vulnerable population with food allergy and intolerance.

SOURDOMICS (CA18101) – Sourdough biotechnology network towards novel, healthier and sustainable food and bioprocesses.

Dr. Biljana Kovacevik

Faculty of Agriculture, “Goce Dalchev” University – Shtip (UGD)

Bread plays a fundamental role in human well-being. Its nutritional value depends largely on its cereal composition, while its distinctive appeal arises from its aerated structure. Although white (wheat) bread with bakers' yeast has become widespread, it has not the taste, aroma, nutritional characteristics and long shelf-life of traditional sourdough whole-grain bread. Prolonged sourdough fermentation is more efficient than yeast fermentation in reducing phytic acid (an anti-nutritional factor). Some sourdough bacteria produce exopolysaccharides (EPS), which improve rheological, flavour and textural properties of bread, exhibit prebiotic properties, are potentially beneficial to gut health and have several applications in pharmaceutical and food industries. Sourdough fermentation is also crucial to dietary fibre degradation or solubilisation. Grain dietary fibre contribute positively to a long list of diseases (e.g. type-2 diabetes, hypercholesterolemia, severe dental caries, constipation, obesity, colorectal cancer and coronary heart disease). It also reduces starch digestibility, thus lowering glycaemic and insulin index. Resistant starch (and other dietary fibres) has received much attention owing to its health potential benefits and functional (prebiotic) properties. Sourdough fermentation may influence positively gut health as a result of its role in modulating dietary fibre pattern, producing EPS with prebiotic properties and, probably, providing favourable bacterial metabolites to gut microflora. In this

context, sourdough technology is undergoing an increasing interest and SOURDOMICS is its materialization, by proposing biotechnological advances through foodomics. The SOURDOMICS COST Action network brings together a multidisciplinary group of scientists from 54 countries who have focused their attention on technology of cereals, sourdough and breadmaking.

Biotechnology in food quality and sustainability.

Dr. Dimitris Tsaltas

Cyprus University of Technology

The role of biotechnology in food quality and sustainability will be presented via examples of the activities from the Laboratory of Agricultural Microbiology and Biotechnology at the Cyprus University of Technology. Next Generation Sequencing (NGS) technologies in food authentication, food quality and safety and sustainability of traditional food products. Also, NGS in microbiome studies as a tool to combat dietary problems.

Dr Dimitris Tsaltas is an Associate Professor of the Department of Agricultural Sciences, Biotechnology and Food Science at Cyprus University of Technology. He has a BSc in Agricultural Sciences and an MSc in Plant Protection from the Agricultural University of Athens. He gained his PhD from Imperial College London in Molecular Plant Pathology and continued his postdoctoral training at the University of Connecticut (USA) in Molecular Microbiology. He also worked at the Agricultural Research Institute (Cyprus) as a Research Advisor within the Crop Protection Department. He served as a Delegate and Expert of Cyprus to the Program Committee of 7th Framework Program in Food, Agriculture, Biotechnology and Fisheries and as Committee Member in the Food & Agriculture Domain of COST. He is a National Representative at ISEKI Food Association, Ambassador of the Global Harmonization Initiative - GHI as well as Ambassador and International Mentor of the American Society for Microbiology (ASM). He leads the Group of Agricultural Microbiology and Biotechnology. The Group is actively engaging in microbial biodiversity and ecology investigations in agroindustrial fermentations. Next Generation Sequencing technologies are used as a tool for these explorations as well as new approach for authenticating food products (microbiome fingerprinting). Additionally, Dr Tsaltas team works on biosensors development, food innovation and new product development. Through the extensive and deep analytical capacity, the group offers an array of services to the local food, agriculture, pharmaceutical and biomedical industry as well as to State Agencies, through consultation and analytical methods for various microbiology issues (microbial IDing, microbial genotyping, detection of microbes etc).

Dietary advice on meat and dairy (1920s-2020s): science, confusion, power, and impact.

Francesca Lemmens

Vrije Universiteit Brussel

Francesca Lemmens is a PhD student and teaching assistant at the Department of Business; Marketing and Consumer Behaviour. She graduated in Social and Economic Sciences. Currently, she is candidate for devoting her PhD research to the objectives of an Interdisciplinary Research Project that will be presented today. In this project, there is a collaboration between Bioengineering Sciences, History, and her department, being Marketing & Consumer Behaviour. The objective of this interdisciplinary research is to advance the understanding on dietary advice on meat and dairy throughout the past century (1920s-2020s). The focus will be on the intertwined and sometimes contradictory spheres of interest from science, industry, and public institutions, and particularly how these diverse authorities impact on consumer decisions and confusion.

The FerFood.CH project - From the genome of lactic acid bacteria to the metabolic response of humans having ingested fermented foods.

Dr. Guy Vergères

Agroscope

About a quarter of the food consumed in the world is fermented. The recognition of the importance of nutritional diversity and, more recently, of the gut microbiota on human health has encouraged new scientific work targeting, more specifically, the benefits of fermented foods. The many biochemical

transformations common to the microbiological ecosystems of fermented foods and the intestinal tract are a key element of FerFood.CH's strategy to exploit Agroscope bacterial collection to introduce nutritional and microbiological diversity into fermented foods in a targeted and innovative way that is potentially beneficial to health. The vision of FerFood.CH is that fermented foods are specifically integrated into the Swiss food pyramid. In order to realise this vision, four sub-projects focusing on the quality of fermented foods in a translational approach are conducted with the following goals:

- Production of fermented milks with selected bacteria maximising the production of metabolites with proven health benefits and characterizing these products in animal and in vitro models.
- Verification and functional characterisation of the nutritional quality of the fermented milks by investigations in human interventional studies.
- Identification and validation in a human cohort of associations between the consumption of different fermented foods and metabolic health.
- Synthesis and communication of the available knowledge to the different stakeholders, the general public and the competent authorities.

PD Dr. Guy Vergères leads the research group Functional Nutritional Biology at Agroscope in Bern, Switzerland. He also leads WG3 of the COST Action “Promoting Innovation of ferMENTed fOods’ (PIMENTO)” on the health benefits/risks of fermented foods. Guy Vergères is chair of the management board of the international nutrigenomics organization NuGO and a lecturer on nutrigenomics at ETH-Zurich and the University of Lausanne. The translational research of Guy Vergères focuses on the nutritional properties of fermented foods making use of the recent advances in analytical strategies in food (foodomics) and nutrition (nutrigenomics) sciences.